

AMERICAN VETERINARY REVIEW.

AUGUST, 1914.

EDITORIAL.

EUROPEAN CHRONICLES.

Paris, 15th June, 1914.

INFECTION BY KOCH BACILLUS IS AN IMMUNIZING DISEASE.

—In a masterly article by Prof. Bernard of the faculty of Medicine of Paris in relation to the *Actual Conception of Human Tuberculosis and the Various Stages of Koch's Bacillosis in Man*, the author takes in consideration the important problems. At first, he treats of the frequency of tuberculosis according to the age of the individuals and in the second part, he considers this important question, viz.: The infection by the bacillus of Koch as an immunizing disease. This part interesting principally veterinarians, I reproduce it.

“ When one brings together the first notion that tuberculosis is taken in young age, with that of the fact of its diminution in gravity and of the increase in latent tuberculosis with age, one cannot help concluding that that disease necessarily immunizes most of the subjects that it attacks.

This conclusion would, in days gone by, have raised a peculiar feeling in the opinion of many. So was it, with the assertions of Marfan, when in 1886 he stated that the subjects, who were affected with lupus and scrofulae and had recovered, had become refractory to an ulterior attack of tuberculosis.

These clinical facts remained ignored until the day came when they drew a new strength by the experimental discoveries made upon tuberculous immunity.

It is Behring, then Calmette and Guerin, who proved the possibility of conferring a temporary immunity to bovines.

In guinea pigs, one of the animals most susceptible to infection of tuberculosis, the obtaining of this immunity is not impossible and has been realized by Borrel and Romer, who reproduced it in sheep, while Krauss had the same result with monkeys.

Finally Webb and Williams, by an experimental determinism, resembling somewhat the conditions of human infection, created immunity in guinea pigs by a progressive bacillar impregnation; started from the inoculation of bacillar unities, they succeeded by increasing inoculation to have the pigs support formidable doses of bacilli, which would unavoidably kill fresh animals.

This collection of facts proves that bacillar infection gives rise to a true auto-vaccination of the organism. This condition manifesting itself by the manner in which the organism reacts against new infections. In relation to this, the discovery of what is called to-day 'the phenomena of Koch,' appears as most important in the study that we make.

It is known, when a subcutaneous inoculation of virulent bacilli of Koch is made on a guinea pig, that a tuberculosis will follow in various steps of development; it is, after a varying lapse of the incubation, according to the dose and the virulence of the bacillus, a nodosity, which ulcerates at the point of inoculation, followed by adenopathy and later by a generalization of the lesions in the spleen, liver and lungs, which kill the animal.

When in a guinea pig previously tuberculized, a new subcutaneous inoculation is made, the phenomena are very different. There occurs very rapidly a *necrotic* ulceration at the point of reinoculation, which is followed by the elimination of the necrosed parts and of the microbes that they contain; then,

soon appears cicatrization. During all that time, there has been no glandular reaction. Such is the phenomena of Koch."

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"Already before the publication of Koch, Charrin and S. Arloing had observed the difference that characterized tuberculous reinoculations from the first inoculation; but these authors had described, not a more mild reaction, as Koch did, but on the contrary, a most severe reaction. Later, Straus, then Hamburger, observed sometimes the mild reaction or again the severe. One or the other being obtained at will, according to Hamburger. Repeating and modifying the experiments of O. Bail with his peritoneal inoculation, Rist and his students have recently shown that an essential difference does not separate the two types of reaction, which after all are due to experimental conditions. Therefore, what characterizes tuberculous reinfection before all, it is that the animal organism reacts differently than in the first infection; in one word, it is that this last has left a deep modification in the fluids of the organism towards the specific germ, modification indicated by the different manner in which it reacts against it, and that is what is designed since von Piquet, by the word *allergia* (from the Greek, other reaction); this *allergia* is manifested either by phenomena of resistance, according to the conditions of the reinfection; it is then, without doubt, a question of quantity and of quality of the bacilli, a question of dose and of virulence, which intervenes in the phenomena in a measure that we only begin to perceive. At any rate, as demonstrated by P. Courmont, *allergia* represents a state of unsteady equilibrium, which varies between the two opposed conditions of hypersensitivity or of resistance; those not due to different and contrary processes; in reality they are but two aspects of tuberculous immunity, manifesting to the same title of the humoral modification produced by the first infection."

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Continuing the consideration of his valuable paper, Prof. Bernard arrives at the following conclusions:

This actual conception of tuberculosis may be entirely resumed in three propositions:

1. The first bacillary infection (primo-infection) takes place in children. As Burnet wrote it, pulmonary phthisy of adults is but the end of a story whose origins are more or less old.

2. The manifestations allotted to adults are due to a reinfection; they are conditioned according to the humoral state left by the primo-infection.

3. Bacillary infection is indeed an immunizing infection. This state of immunity, or better, of allergy, varies, is unequal and unstable. Tuberculous allergy, resulting from primo-infection, governs the evolution of reinfections.

The practical importance of these new notions is considerable. Prophylaxy must take them into consideration for all the measures which will prevent any possible reinfections, which are the great danger of tuberculized. Finally, as Calmette has demonstrated, therapeuty must direct its way towards the possibility of antituberculous vaccinations.

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STRONG AND WEAK ORGANISMS WITH VIRULENT MICROBES.—It is certain that the condition of organism enters more or less in the aptitude that one may possess for the reception and cultivation of virulent microbes and on that account in the modern methods which are resorted to in the anti-tuberculous struggle, the preferences of the medical world are to render the people intertuberculisable, and to suppress all debilitating factors. But there seems to be one point which is overlooked, viz.: That clinics have never established the fact that weak organisms were alone liable to contract tuberculosis, and besides experiments have clearly proved that the most flourishing organisms were able to receive and liable to cultivate the germ.

Such was expressed in a communication made by the learned Professor Chauveau before the Academie des Sciences.

In 1868 Chauveau stated that sixty subjects of bovine species had all contracted tuberculosis by the ingestion of virus, and this peculiarity so well established for that disease was specific to it.

Laboratory studies and practice of preventive inoculation have shown that such is not the case; inoculation of the vaccine of variola in man and that of small pox in bovine succeed as well in strong subjects as it does in debilitated.

To demonstrate positively that, as in the case of tuberculosis, "the conditions of the resistance of the culture media are indifferent to the success of the development of virulent agents," there must be that the penetration takes place through the natural ways of contagion—and Chauveau, in the course of experiments he had made on the conditions of the propagation of variola in flocks of sheep, had exposed simultaneously strong and weak animals to the natural infection.

These experiments had for their object the study of the mechanism of the mediate contagion of the disease without the intervention of any intermediate. Two lots of sheep were isolated in the two extremities of the same stable. The first lot was formed of variolous sheep in the stage of eruption. The second of fresh sheep, of same breed and origin as the sick ones.

After 15 days no change had taken place in the sheep of the second lot, even in their temperature.

Two suppositions prevailed then: Either the virus from the first lot had not reached those of the second or the organism of these presented a refractory medium to the development of the disease. The fresh sheep were then mixed with the sick ones, they became infected and if they had remained healthy it would have been that they had not received any germ from the contaminating lot. All the sheep of the second lot were not in the same resisting condition, some were debilitated by parasitic diseases, they all took the disease.

Therefore, "nothing distinguishes vigorous organisms from weak ones from the point of view of their aptitude to receive and cultivate the virus of variola"—but it is observed "that

there is a greater sensibility of the weak subjects to the injurious effects of the invasion of the virus."

Those organisms behave in the same manner for diseases with slow evolution as they do with tuberculosis.

"Only the direct war of the agent of tuberculosis and the defence of the healthy subjects against the infesting action of bacilli carriers are indicated by science as a means able to arrest, diminish and suppress the terrible ravages of this scourge."

"Exception to those general rules of public and private hygiene would, in the case of tuberculosis, be scientific nonsense."

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BACILLEMIA AMONGST TUBERCULOUS SUBJECTS.—As is known, that is a question which for ten years has been the object of the most contradictory publications. In a recent number of the *Annales de Medecine*, there is a critical review of all those and of the systematic researches relating to them.

After a concise exposé of the question, the writers pass in review the methods resorted to, to look for the bacillus of Koch in the blood and they discuss the interpretation of the facts that have been published. They conclude that those who have made these interpretations and claim to have found in tuberculous subjects a very great frequency of bacillemia, they had obtained those results only by erroneous technics. With correct and proper ones, the bacillus is found only exceptionally in the blood, either during a chronic or an acute tuberculosis. Even in granulic cases the presence of bacillemia, although more frequent, is still uncertain and not constant.

Perhaps the examination of very large quantities of blood would give more numerous positive results, but it would nevertheless demonstrate at the same time that the bacillus is not in abundance in the blood of those sick individuals.

Consequently, when it exists, bacillemia cannot be considered as a real septicaemia in tuberculosis, at least in the classical form.

With those diseased subjects, bacillemia indicates not an infection of the blood, but a bacillar migration, which commands the secondary localization of the disease. There exists perhaps a permanent bacillemia in granulic subjects and in other forms of the bacillar infection; but in chronic patients there occur only inconstant and transitory bacillemic manifestations of which the determinism and clinical expression remain yet unknown.

Practically, the presence of bacillemia is without value for the diagnosis, prognosis and prophylaxy of the disease.

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SURGICAL APPLICATIONS OF ETHER BESIDES ANESTHESIA.—An interesting article of Practical Medicine appeared in the *Presse Médicale*.

For a long time ether has been used in surgery, it has almost no toxicity, its quite great antiseptic power justify its uses; besides, it dissolves fats and its quite rapid evaporation permits its use as a cold substance likely to bring, in some cases, a marked revulsive effect.

All those qualities have found their applications in surgery, although many are limited or even given up. By opposition *permanent dressings* with ether are yet in favor, and *washings* with ether seem also to acquire a great importance in abdominal surgery and particularly in suppurative peritonitis.

Let us consider the first, viz.: The *permanent dressings with ether*.

They are very simple to apply—one bearing in mind that ether evaporates quickly and that he must operate rapidly also. The dressing must be wide, very wide, beyond the size of the spot on which it is applied and must be hermetic so as to keep the longest time possible the ether in contact with the teguments.

For this, a piece of impermeable stuff is prepared, of sufficient size and covered with ordinary (not hydrophile) wadding. The region has been most thoroughly cleaned, the skin brushed

with soap and washed with boiled water, aseptic compresses are applied all round and impermeable cotton put under the wound. It is only immediately when the whole dressing is to be closed that compresses, soaked with sulphuric ether are put on the wound. The whole is covered over with an impermeable envelope. A roller is put on a little tight on the extremities of the dressing to make it more hermetic.

Thus is realized, a true ether embalming. It sends its vapors in the most remote parts of the wound and sterilizes all the surrounding skin.

This dressing finds its peculiar indications in large contused wounds, with edges torn and smashed, with anfractuous cavities that no washing could clean sufficiently.

If the wound is recent and not suppurating yet, the dressing can be left on 5 or 6 days, or even more, watching the temperature of the patient. This does not rise, and in removing the dressing one is surprised to find a clean wound in full granulating condition and in good way of repair.

Besides the cases of complicated fractures, infected and suppurating wounds, abscesses, lymphangitis, erysipelas, etc., ether dressings have done wonders in case of *burns*. The extent of the lesion being no counter indication, ether not being toxic.

We feel that this new application of ether can find its indication in our practice.

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BIBLIOGRAPHIC NOTICES.—Internal pathology: *Nutrition, Auto-intoxication, Urinary Apparatus, Skin*: (Pathologie interne, nutrition, auto-intoxication, appareil urinaire, peau), by Prof. Cadeac, of Lyon.

This new volume of the world-wide known Cadeac Encyclopedia is a book of over 500 pages, with 143 illustrations, published by J. B. Bailliere & Sons.

Part of the second edition of the Internal Pathology, this volume takes the entire consideration of the diseases of nutri-

tion by auto-intoxication of the urinary apparatus and of the skin.

In the diseases of nutrition are considered diabetes, obesity and gout; the other affections, such as achondroplasia, rachitism, bony cachexia, snorting disease, equine othomalena, etc., etc., are treated very concisely as they have already occupied full attention in the first volume of the *Surgical Pathology*, by the same author.

In diseases by auto-intoxication is only mentioned in this volume the study of paroxysmic muscular hemoglobinuria, the many other affections due to auto-intoxication have also been treated in other volumes of the *Encyclopedia*. But if hemoglobinuria occupies now a pre-eminent place, it is due to the minute study that the author has made of it; advocate of the theory of the auto-intoxication of digestive origin, Cadeac treats the subject from this point of view as an intoxication promoted by temporary renal insufficiency, made more serious by cold exposure or influence.

For the diseases of the urinary apparatus, they are the revised of the first edition, exclusively and entirely made by the author.

The skin diseases have been classified in a new way, which has rendered their description more rational. Divided into nine chapters, they treat successively of trichosis, eczematous dermatitis, keratosis, cutaneous hypertrophies, neuro-dermatosis, artificial or pseudo dermatitis, microbian dermatosis, parasitic and finally those due to insects.

The work is arranged as all the others of the *Encyclopedia*, and, in succession, all the diseases in the different species of domestic animals are considered.

The book will be well appreciated by all those who will read it, students and practitioners.

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JOURNAL OF COMPARATIVE PATHOLOGY AND THERAPEUTICS.—This excellent publication, at the head of which we find the names of two of our most worthy confrères, Sir John

McFadyean and Sir Stewart Stockman, has begun its twenty-seventh volume this year, and in this part—that of March—there are subjects which are of unusual interest.

Amongst the general articles are one on *Equine Granuloma in Australia*, by Lecturer J. C. Lewis, D.V.S., of the School of Melbourne University—a well documented article, richly illustrated by views of granuloma of the carpus, of the metatarsus, of the abdomen and with micro-photographs. Comparative pathology occupies also in this number a valuable place. *On the pathology of the thyroid gland in wild animals* is a communication from Herbert Fox, the Pathologist of the Laboratory of Comparative Pathology of the Philadelphia Zoological Garden; where at first some generalities on goitres, a number of cases are presented, viz.: On a lioness, wolf, raccoon, leopard, hyena, dingo, gnu, hawfinch, parakeet, raccoon-like dog, golden pheasant, tasmania devil, skunk, opossum.

After perusing that article, the reader must ask himself to what limits the study of comparative medicine may carry him.

In this number there is also the continuation of the article by Major-General T. Smith, F.R.C.V.S., upon the *Early history of veterinary literature and its British development*. This article is but the continuation of those published in a previous number of the Journal, and brings the reader within the year of 1564. Part I of Vol. XXVII continues the good work which has made its efforts so well appreciated by all veterinary and comparative pathologists.

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The bulletin of the Department of Agriculture, No. 65, of the contributions of the Bureau of Animal Industry, is a professional paper addressed by John R. Mohler, V.M.D., the learned Chief of the Pathological Division. Its subject is of the greatest interest and certainly every veterinarian will do well to read it.

It treats of *cerebro-spinal meningitis* (forage poisoning). As one who has had the sad opportunity to observe several outbreaks of this terrible disease, we were very interested in the

reading of this bulletin that those who in their practice may meet with in their daily calls will find on the history nomenclature, etiology, occurrence, symptomatology, lesions and treatment, informations which would be difficult to gather by the perusal of classical works.

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NOTICE OF PAMPHLETS RECEIVED AND OTHERS.—B. A. I., Dairy Division—*Origin of Some of the Streptococci Found in Milk*, by L. A. Rogers and Arnold O. Dahlberg.

Reduction of Arsenic Acid to Arsenious Acid by Thiosulphuric Acid, by R. M. Chapin.

The Ophthalmic Test for Glanders, by A. D. Melvin, Chief of the Bureau.

U. S. Department of Agriculture. Farmers Bulletin 569.

Texas or Tick Fever, by John R. Mohler, V.M.D., Chief of the Pathological Division.

Cysticoccus Ovis, the Cause of Tapeworm Cysts in Mutton, by B. H. Ransom, Chief, Zoological Division, B.A.T.A., handsomely illustrated and complete pamphlet with historical summary; life history, pathology, etc., etc., and bibliography on the subject.

Agricultural Journal of the Union of South Africa, March, 1914.

Vol. II, *First International Congress of Comparative Pathology*—reports and communications (to be reviewed later).

The Cornell Veterinarian—January, 1914. Official publication of Cornell University.

Announcement of the State Veterinary College—1914-1915.

Notes on the Surgery of Fistulous Withers, by Profs. W. L. Williams and J. N. Frost.

Retained Placenta in the Cow, by Prof. W. L. Williams.

Proceedings of the American Veterinary Medical Association—1913. (To be reviewed later.)

Bureau of Animal Industry. Bulletin of the U. S. Department of Agriculture, No. 76. *Laboratory and Field Assay of*

Arsenical Dipping Fluids, by Robert M. Chapin, of the Bio-
chemic Division.

No. 79. *Immunization Tests With Glanders Vaccine*, by
John R. Mohler and Adolph Eichhorn, of the Pathological Di-
vision.

A. L.

THE SWIFT, STRONG RUSH TO FINAL VICTORY.

THE ARMY VETERINARY SERVICE BILL (H. R. 4541) IS PRACTICALLY A LAW—CROWD BEHIND IT AND PUSH IT THROUGH THE SENATE.

Nine-tenths of the work of making the Army Veterinary Service Bill (H. R. 4541) a federal statute is over. Early in February it passed the House Military Committee unanimously. Far better than that, on June 29th it passed on the floor of the House, again without a vote against it. Best of all, on June 26th it was favorably passed by the whole Senate Committee on Military Affairs and was recommended for passage on the floor of the Senate. All there is to do now is to get it passed on the Senate floor. Of course, it is on the Senate calendar and is nervously waiting its chance to get off the spindle at the time when Senator Chamberlain, the chairman of the Senate Military Committee, can get the floor at the time the bill is reached. In a few jiffies then the vote of the Senate will take place, and, if the bill passes, the signature of President Wilson will make it a law.

This, as it reads here, may seem all well enough. But there is the torturing thought that the calamity may occur that we cannot get the bill through on the floor of the Senate. Brethren of the profession, the prevention of that disaster is entirely in your hands. The three central figures in the scene when the bill comes to a vote on the Senate floor will be Vice-President Marshall (presiding officer of the Senate), Senator Kern, leader of the Democrats in the Senate, Senator Chamberlain, chairman of the Senate Military Committee. All these men are for the

bill. Mr. Kern introduced the bill into the Senate. Mr. Chamberlain and his committee have just recommended that the bill be made a law, and the Vice-President is our friend.

The dangers are two: First, the Senate calendar is loaded with bills and there is the painful possibility that ours may not be reached. Second, there is the terrible chance that something may go wrong should the bill be called up for a vote. What will this or that senator attempt to do?

If the bill has not passed the Senate by the time this number of the REVIEW reaches our readers, we beg them to remember that the seed of destiny is in their hands. The bill has gone nine-tenths of its passage through Congress and will become a law if we muster yet a little more force now. For thirty-five years we have fought for this issue and the best missionary spirit of the profession has gone into it. Tell your senator of the good such a law (as the enactment of H. R. 4541) would be to the army, to the country and to your state and community. We are a band of patriots kindled with fire from the altar of truth and justice. Our forefathers at Bunker Hill never fought harder than we against tyranny and for the right; against error and for the truth. We yield nothing to our senators in patriotism; we crowd behind this bill because it is for the good of our country.

G. S.

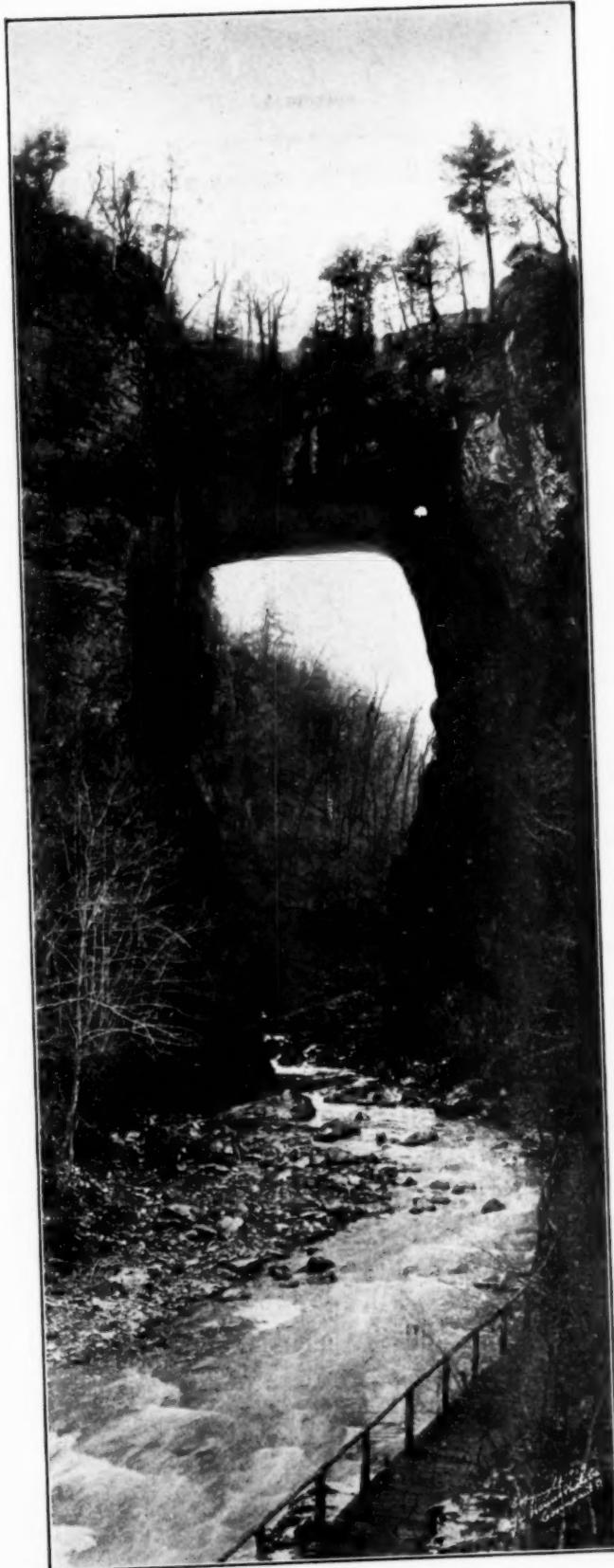
PLEASURABLE ANTICIPATIONS IN CONNECTION WITH A. V. M. A. MEETING AT NEW ORLEANS.

Thos. Jefferson in his "Notes on Virginia" says: "The Natural Bridge, the most sublime of Nature's works! * * * * * It is impossible for the emotions arising from the sublime to be "felt beyond what they are here: so beautiful an arch, so "elevated, so light, and springing as it were up to heaven! The "rapture of the spectator is really indescribable!"

While a great number of American veterinarians are "on the other side" for the International Congress in London,—a splendid representation at that important international gathering—many loyal sons have been compelled to remain at home

through a call to duty there. It is fortunate that such a large representation were able to attend the congress, so that America might occupy a prominent place on the programme, and in the proceedings that will become history at the close of the London congress; and we rejoice in the realization.

Amongst those whom duty has detained at home, most to be commended, are the men who have foregone this opportunity of visiting Europe under such exceptional conditions in order to prepare for the coming meeting of the American Veterinary Medical Association at New Orleans in December. December at this writing seems a long way off, and yet it is not too long to indulge in thoughts of anticipation. It seems but yesterday since we began to anticipate the European tour and the London congress, and now they are nearly in the past. But many of us even who were in the end unable to participate in it got considerable pleasure out of anticipating such participation. So let us begin early to enjoy in anticipation a trip to New Orleans, and hope in this case that *all* may also enjoy the realization. It seems too *much* to anticipate the trip and the sojourn in the beautiful city of romance all at once, so let us take it in instalments, and in this first one picture a trip that will take us through the enchanting Shenandoah Valley and thence to the Southland. This route, via the Pennsylvania and the Norfolk and Western Railway, will especially commend itself to members of the A. V. M. A., their families and friends, from Middle, Atlantic and New England States, and their neighbors up north in Canada, to whom it will be a direct route; and the beauties of it and the wonderland that it will traverse will be sufficient to attract others to whom it may not appeal from the viewpoint of a mile-saver. Canadians, New England and Atlantic State members would make New York City their starting point; others in Pennsylvania would start from Philadelphia or Harrisburg, and so on down the line. We will not go into the technique of route at this time, but refer to some of the beauties and wonders found early in the trip to New Orleans, if the route which lies over the Norfolk & Western, or what is termed by railroad men as the New York and New Orleans short line.



“The
Natural
Bridge,
the most
sublime
of
Nature's
Works.”

—Thos. Jefferson

Let us romance a little on the scenery at this time and indulge in cold travel details later. There are the Alleghany Mountains and Valley, near Shawsville, Virginia, Castle Rock, New River, Virginia, Roanoke Valley, the Falls near Buena Vista, Natural Bridge, one of nature's wonders, like the mighty canyon of Arizona, that makes man realize his physical insignificance, and then



Skyland Elevation 4,000 Feet—Near Luray, Va.

the wonderful nature's architecture and artistic beauty of the Luray Caverns, at Luray, Virginia, which attract visitors from all parts of the world. Three hours can be devoted en route in traversing the interior of the caverns, electrically lighted, so as to reveal all their wonderful formations. These caves, which excel all others in the combined extent, variety, scientific interest and beauty of their calcite formations, were discovered in 1878, and shortly afterward opened to the public; although the full extent of their subterranean depths was not then known, or even dreamed of, and not until thoroughly equipped exploring parties had penetrated seemingly endless chambers and labyrinthine passages were their boundless riches disclosed and made accessible to visitors. There is the Ball Room, the Giant's Hall, the Fish Market, Skeleton Gorge, the Natural Bridge, Organ and Chimes in Cathedral, and Saracen's Tent, each more wonderful and awe-inspiring than the other. It is not possible to describe the scenes that fill the beholder with mute wonder, as he stands gazing spell-bound at the grandeur in the fantastic shapes, in the almost imperceptible silence, and the weird in-

fluence of this subterranean realm; stands amazed in the royal chambers of the King of Nature. Various apartments and objects have been named in honor of some distinguished personage, or after something to which they bear a striking resemblance.

The Elfin Ramble, an open plateau five hundred feet long by one hundred in breadth, is the playground of the princesses of this fairy realm. Pluto's Chasm, a wide rift in the walls, contains a spectre clothed in shadowy draperies. Hovey's Hall is adorned with statuary and stalactite draperies, which, for beauty of coloring, translucency and symmetrical folding, are unexcelled



Caverns of Luray—Luray, Va.

by anything in the cave. Giant's Hall is a vast space, embracing several chambers. Heroic sentinel forms loom up on every side, guarding the marvelous beauty of Titania's Veil, and watching over the crystal waters of Diana's Bath. The Saracen's Tent, the Cathedral, with its grand organ, and the Bridal Chamber, all bear striking resemblance to the objects for which they are

named. Hades, a region sparkling with limped lakes and peopled with goblins, receives its name from the bewildering windings and labyrinthine meanderings through which the tourist must tread his way. Notwithstanding its uninviting name, it is a very attractive portion of the cave and contains many wonderful formations, and the Ball Room, a magnificent apartment, gorgeously furnished, is full of interest.

And so we might write on and still have only suggested the beauties and the wonders that are in store for visitors to the beautiful Caverns of Luray, which are formed under a great hill in Page Valley. This hill has an elevation of about 1,200 feet above sea level, and rises about 200 feet above the surrounding valley. But we will content ourselves with these few suggestions of what Virginia, the late home of our A. V. M. A. secretary, offers, and in a future number will endeavor to depict some more of the beauties of the route as it continues in the direction of the Gulf.

NOTE.—After the foregoing was in type, we received a communication from the passenger agent of the Norfolk and Western, with some specific suggestions, which will be found on page 582 of this issue.—[Editor.]

CAMPAIGN OF LOBECK BILL CONTINUED FROM WISCONSIN—CONGRESS ENGROSSED IN ANTI-TRUST LEGISLATION.

It was our great pleasure to receive a call from Secretary Walkley, of the National Association of B. A. I. employees, on July 6. Dr. Walkley left Washington (where he had been for about two months, devoting his energies in the interest of the Lobeck-Lewis bill) for New York on July 3, and when he left us on July 6 to get the midnight train for Milwaukee he did so reluctantly, knowing that when he opened his eyes after a night in the "sleeper" he would have passed far beyond the alluring

atmosphere of the great American metropolis. While here the doctor made good use of his time, having gotten around and conferred with several Bureau officials, despite the fact that he had a national holiday and a Sunday in his brief sojourn with us. He got in a lot of social work too; visited the New York Zoological Park in the Bronx, was entertained by officers of Branch 19; attending a ball game between the Phillies and the Giants with Secretary McCarthy of that branch, and in the evening they were joined by Dr. and Mrs. Geo. W. Famous at a theatre party. He also had a conference with Chairman H. R. Meyers of the Ways and Means Committee of the Federal Civil Service Society of New York; visited Ellis Island, where immigration officials explained to him the details of handling immigrants, and had just begun to see New York when he had to tear himself away and head for Milwaukee, from which point he will continue his campaign in the interest of Bill H. R. 9292—S. 5720. Anti-trust legislation is engrossing Congress so that bills of the nature of this one cannot get a hearing for some time, and there is a possibility of its not being reached in the present session. Dr. Walkley has worked hard for the measure and is still working, and is deserving of the gratitude of all B. A. I. employees, which we are sure they all feel.

NEW YORK CITY THE LOGICAL PLACE FOR THE
THIRD ANNUAL MEETING OF THE NATIONAL
ASSOCIATION OF BUREAU OF ANIMAL
INDUSTRY EMPLOYEES.

The second annual convention of the National Association of B. A. I. employees will be held in Denver, Colorado, August 10, 1914, where it is hoped that there will be a large and representative attendance, as the various branches have elected delegates and alternate delegates, there being many important questions to be considered. The meeting last year was in Chicago,

and this year they thought to go a little further west, and made the very excellent selection of the city of Denver. Secretary Walkley, on being asked whether he did not think New York would be an excellent place to suggest for their 1915 meeting, said: "When I left Milwaukee for Washington I thought that the place I would suggest for the next meeting of our association would be in the land of beer and the home of the Deutch, but I now feel that that is too far from the 'Great White Way,' and I would like to see our boys meet right here in New York in 1915."

And Dr. Walkley's change of view from his home city to New York is a step in the right direction, and we hope that he will be able to convince his colleagues the same way before the adjournment of the Denver meeting. New York City in itself is, of course, sufficiently attractive from an educational standpoint, in a *general* way (to say nothing of the entertainment it offers), but what the association will want to consider in selecting a place is, are there any *special* educational advantages to be found in New York? Bureau men will be in position to answer that question better than any one else. Will it be advantageous to them to witness special methods of inspection which they, as B. A. I. men know whether or not New York has to offer? Would the inspection of imported meats at the piers interest them? Or the inspection of Kosher cattle, which is done in New York, we understand, on Sunday? We believe these inspections would prove both interesting and instructive, and hundreds of other particular methods of inspection peculiar to New York City. Besides such a selection is now due the eastern members. We offer our many friends in the B. A. I. service the pages of the REVIEW upon which to ply their arguments, if the matter is not settled at the Denver meeting, and will promise an array of arguments ourselves that will convince the most skeptical that *New York City is the logical place for the Third Annual Meeting of the National Association of Bureau of Animal Industry Employees.*

ORIGINAL ARTICLES.

SOME MECHANICAL FACTORS IN DIGESTION.

BY SEPTIMUS SISSON, S.B., V.S., PROFESSOR OF COMPARATIVE ANATOMY, OHIO STATE UNIVERSITY.

(Continued from July.)

The effect of watering on the stomach contents and the transport of water through the stomach and small intestine are important in regard to dietics, and conflicting views have been expressed in this connection. Smith (*loc. cit.*, p. 181) states that "the regular arrangement of food in layers is disturbed when a horse is watered after feeding; half the food may in this way be washed out of the stomach, for the water which a horse drinks does not stop in the stomach, but passes directly through it on its way to the caecum. Hence we have the golden rule of experience that horses should be watered first and fed afterwards." Colin(25) concluded from his observations that in some cases the water passed from cardia to pylorus along the lesser curvature without disturbing or diluting the contents of the stomach, while in other cases it mixed with the ingesta, which it reduced to a soup-like consistence and washed into the intestine. It is self-evident that when a horse which has eaten an ordinary feed drinks any considerable amount of water, both cannot be accommodated in the stomach. As previously stated, Cohnheim observed that in the dog, when the stomach is full, water will pass from cardia to pylorus along the lesser curvature without material effect on the gastric contents. A like process has been observed in man. Investigations were recently made by Scheunert and Schattke (*loc. cit.*) to determine the results

on the stomach contents of watering and also the transit of water through the intestine. The water was colored with malachite green, so that its distribution could be noted. Observations were also made of the variations of the water content of the ingesta in the stomach, the chemical phenomena of digestion, and the arrangement of the various parts of the rations in the stomach. The conclusions reached by these observers were as follows: 1, That the drinking of water in any amount desired by the animal exerted no deleterious effect on digestion. 2, That the increase in the water content of the ingesta was inconsiderable, reaching at most 10 per cent. above the normal average; a similar increase can be produced by the large amount of saliva secreted during mastication of hay or by exercise. The interval before return to the usual lower water content varies individually; in one case it was only ten minutes in duration, but in general appears to be one or two hours. 3, The bulk of the water leaves the stomach quickly. When the stomach is well filled, the contents are only penetrated very superficially by the water. In the left extremity very little or no staining of the ingesta took place. The water appeared to go first to the central part of the stomach, *i. e.*, ventral to the cardia, as one would naturally expect, and passed to the pylorus chiefly along each side and along the greater curvature. Only in cases in which the stomach contained little food was the latter stained throughout, showing complete penetration of the water. It would appear that fluid would be prevented from passing directly from cardia to pylorus along the lesser curvature (Magenstrasse of Waldeyer) by the large ridge produced by the folding here of the wall of the stomach.

The view is prevalent that water passes rapidly through the small intestine of the horse and thus quickly reaches the caecum; the latter being regarded as a reservoir for fluid. Ellenberger (26) states that "in the horse water passes very quickly, not only through the stomach, but also through the small intestine, and may have arrived in part in the caecum in a few minutes. Colin has expressed a similar view. F. Smith (*loc. cit.*, p. 213) states that "experiment show that water will pass from the

stomach to the caecum in from five to fifteen minutes. By applying the ear over the duodenum, as it passes under the last rib on the right side, the water which a horse at that moment is drinking may be heard rushing through the intestines on its way to the caecum." It is quite true that auscultation as indicated will reveal the passage of fluid in the duodenum, but this furnishes no information as to what takes place in the remaining seventy feet of the small intestine. The numerous observations of Scheunert and Schattke do not support this view. They found that in cases in which a considerable amount (9-12 liters) of water was drunk, the bulk of it passed into the small intestine in a short time, but that a period of three-quarters of an hour to an hour elapsed before any reached the caecum. This period does not appear to be influenced by the amount of water taken, but the rapidity of distribution in the small intestine, as might be expected, is in direct proportion to the quantity drunk. It seems that here absorption quickly reduces the amount of water in the bowel and thus prevents interference with digestion and the premature transport of material into the large intestine.

The mechanism of the compound stomach of the ox offers many problems which are yet unsolved. Most of the statements current in regard to it are not based on experimental evidence, but are more or less plausible inferences drawn from anatomical facts. Even so elementary a matter as the question into which part of the stomach *ingesta* enter has been variously answered. It seems to be quite commonly believed that fluid and finely divided food pass from the cardia to the omasum by way of the so-called oesophageal groove. Doubtless this was originally a pure assumption, and it assuredly is not supported by experimental evidence or anatomical arrangement. Vryburg(27) gave cattle 2-3 liters of water colored with fuchsin, which was administered by means of an irrigator, the head being about horizontal. He found that in three of these (adults) which were killed immediately there was no colored fluid in the omasum or abomasum. Three others were slaughtered at the end of 7, 8 and 10 hours, respectively; in the first a little colored fluid had reached the

first part of the omasum; in the second the ventral part of the omasum and a portion of the abomasum were stained; while in the third part of the fluid had reached the duodenum. In the case of an ox which had drunk voluntarily and was killed half an hour afterward a small part of the omasum was stained. The same was true of a calf eight months old. Vryburg concluded that all or almost all of the fluid swallowed by cattle passes into the rumen; this view is in conformity with our present knowledge of the internal topography of the bovine stomach. Craig(28) administered half a gallon of water deeply colored with fuchsin to three cattle; in two cases it was given with a drenching horn and in the third through a probang. A two-year-old bullock was allowed to drink a bucketful of water and was then drenched with two quarts of water colored with magenta. A goat was drenched with half a pint of water similarly colored; during administration the animal was placed on its haunches and the head held back. The animals were killed immediately afterward. Colored fluid was found only in the rumen and reticulum—not a trace of it was present in the omasum or abomasum. The stain had diffused through the contents of the reticulum, but in the rumen it was present only in the solid food near the wall. As Craig states, these results show at least what takes place when medicinal agents are given in drench, *i. e.*, they are diluted in the rumen and reticulum. This explains, for example, the very limited action on parasites in the abomasum or intestine of anthelmintics administered *per os*. It is to be regretted that these observers do not state whether there was any staining of the oesophageal groove. Colin made several observations on cattle by passing the hand to the cardia through a flank incision. He states that when the animal drank water, the latter passed in great part into the reticulum and then flowed over into the rumen; a very small amount trickled down the oesophageal groove. Evidently the important functional feature here is not the groove, but the thick muscular pillars which constitute the so-called lips of the groove. The contraction of these pillars would shorten that part of the wall of the stomach and

close the reticulo-omasal opening. Under what circumstances this action takes place we do not know, but it would seem that it might occur in regurgitation and in the transfer of ingesta from the reticulum to the rumen. The writer's observations lead him to believe that all ingesta which are swallowed in a natural manner pass through the atrium of the stomach into the anterior part of the dorsal sac of the rumen, and this view is in conformity with the anatomical arrangement.

In cattle the first mastication is brief and consequently such material as grass or hay passes into the rumen in a comparatively rough state. Here it is mixed up with the soft and watery ingesta already present; much of the latter, it is to be noted, has already undergone a second and thorough mastication and insalivation. There appears to be ample ground for the view that the ingesta are moved in all directions and thoroughly mixed up in the rumen. Contraction waves passing along the rumen can be determined by inspection, palpation and auscultation. Direct observations of the movements of the rumen and its contents have been made by Colin and others. Marked shortening of the organ and constriction between the dorsal and ventral sacs are produced by contraction of the powerful muscular pillars. The movement of the contents would be facilitated by the richly papillated character of the greater part of the mucous membrane, which gives the wall of the ventral sac in particular a good "grip" on the contents. The contractions of the rumen average two to three per minute; they are normally stronger and more frequent during feeding and for some time afterward than at other times. They can be readily timed by watching the alternate prominence and flattening of the paralumbar fossa, except when the rumen is distended or the animal is too fat. Descriptions of the sounds produced within the rumen by the movements of its contents, the explosion of gas bubbles, etc., and those caused by the friction between the stomach and the abdominal wall are given in considerable detail in the works of Marck (27), Vogel (28), and Friedberger and Frohner (29). Interesting studies of the action of the ruminant stomach and the effect of

various medicinal agents thereon have been carried on by several workers in Gmeiner's clinic in Giessen. Reference to these researches and further observations are given in a recent article by Haertle (30).

Nothing definite is known in regard to the special functions of the reticulum. Ellenberger observed that this sac is capable of extreme contraction, which occurs with great rapidity, like that of striped muscle.* The entire sac appears to contract at once, so that a contraction-wave is not seen. There are three possible outlets for the reticular contents: they may pass 1, backward into the dorsal sac of the rumen over the rumino-reticular fold; 2, into the omasum, or 3, into the oesophagus. It would seem that in general the first of these directions would be followed, except when the rumen contracts simultaneously, although smaller amounts could pass through the reticulo-omasal orifice if open. Observations indicate that only fluid and ingesta which have undergone very considerable comminution enter the omasum. This would be expected from the relatively small size of the opening and the existence here of peculiar, curved, horny papillae.

Rumination consists of the return of portions of the ingesta from the rumen and reticulum to the mouth, where it undergoes thorough mastication and insalivation, and is again swallowed. The process is repeated at intervals six to eight or even more times during twenty-four hours and occupies about a fourth of the time. It usually begins half or three-quarters of an hour after feeding, but occurs at other times. The external phenomena are readily observed. The animal usually lies down, and assumes a sleepy appearance, with the eyes half closed. Working oxen and camels, however, utilize intervals of rest for the purpose even when not permitted to lie down. The process is under the control of the will in the sense that it may be interrupted by the presence of a strange object or by an unwonted sound, and is resumed when the animal recovers its composure. The mech-

* The longitudinal (striped) fibres of the oesophagus are continued by scattered bundles in the wall of the atrium and especially along the oesophageal groove.

anism of regurgitation is apparently quite simple. The essential factors seem to be: 1, negative pressure in the thoracic part of the oesophagus produced by its relaxation and by the inspiratory phase of the diaphragm; 2, contraction of the rumen and reticulum; 3, contraction of the abdominal muscles. The result is that a portion of the ingesta in the atrium of the stomach is injected forcibly into the oesophagus and carried to the mouth. The rôle of the oesophagus appears to be mainly a passive one, although one may observe a contraction wave pass along the cervical part toward the pharynx. As soon as the mass reaches the mouth, superfluous fluid is squeezed out of it and swallowed. Mastication begins at once and continues half a minute to a minute, according to the state of the bolus. The lateral excursion of the mandible is very extensive and the mixture with parotid secretion thorough; it is remarkable that the mandibular glands do not secrete during rumination. The bolus is then swallowed and in three or four seconds another one has reached the mouth. The "cud" weighs about 100-120 gm. During mastication fluid is swallowed at intervals and eructations of gas occur. It is observed that rumination will not take place unless the rumen contains a certain amount of ingesta and fluid. It is also inhibited, on the other hand, by undue distension. In the former case apparently there is not an adequate stimulus for the reflex, and in the other local anemia and stretching of the muscular coat prevent contraction. There is no evidence to support the view that the remasticated bolus when swallowed passes along the oesophageal groove to the omasum. It is, to say the least, highly improbable that such is the case, and in the camel it evidently could not occur.

The process of rumination is sometimes regarded as a sort of physiological vomiting, in which ejection of the bolus is inhibited. While it is true that the two processes have some factors in common, they evidently differ in important particulars. In both the cardia is relaxed and the abdominal muscles contract. But Cannon's observations indicate that in vomiting that rôle of the stomach is relatively passive. He noted that in the

cat, after administration of apomorphine, the left part of the stomach is relaxed and flaccid. Several deep contraction-waves pass from the mid-region to the pyloric vestibule, from which a slight wave continues. A strong contraction at the *incisura angularis* divides the cavity into two parts. A quick contraction of diaphragm and abdominal muscles ejects part of the contents of the stomach through the relaxed cardia. As the jerky contractions are repeated the stomach seems to close about the remnant of its contents. Assuming that the chief factors in regurgitation in vomiting are relaxation of the cardia and contraction of the diaphragm and abdominal muscles, it is not at all surprising that the horse ordinarily vomits with great difficulty, only when in extremis, and not with complete effectiveness. Indeed it is remarkable that the phenomenon occurs at all in this species when one takes into consideration the peculiar powerful cardiac sphincter, the great thickness of the muscular coat and the small potential lumen of the terminal part of the oesophagus, and the small size of the stomach. The latter is separated from the abdominal wall (normally), except that a comparatively small part is in contact with the diaphragm. Furthermore, contraction of the diaphragm would undoubtedly constrict the terminal part of the oesophagus in the *hiatus oesophageus*, the edges of which are thick and muscular. In addition to all this, egress of ingesta through the cardia is prevented ordinarily by folds of mucous membrane, and it would appear that the cardia would need to be considerably dilated to overcome this impediment. In the dog, cat and pig the situation is very different; the terminal part of the oesophagus is thin-walled and has a large potential lumen, the cardia is very dilatable, and the stomach is relatively large and has extensive contact with the abdominal wall when it is well filled. The ease and effectiveness with which such animals vomit is readily understood. In this connection the observations of Cannon (31) with regard to the movements of particles of food in the stomach when the gastric contents were largely fluid are interesting. He noted repeated regurgitations into the oesophagus; fluid passed quickly as far as the heart-level or the

root of the neck, but was returned to the stomach at once by a peristaltic wave. This action recurred periodically for twenty or thirty minutes; it gradually became less frequent and subsided (in the cat) after a rate of one per minute was reached. Fluidity is a prime factor in the phenomenon. Vomiting is not frequently observed in cattle, and is not performed so readily as in the dog or pig, but in some cases they eject through the mouth a large quantity (even more than ten liters according to Marek) of the more fluid contents of the rumen and reticulum. In the horse the vomited material is ejected chiefly from the nostrils, and not uncommonly pneumonia results from the aspiration of some of the ingesta. It is doubtless true that the ease with which vomiting is initiated in some animals as compared with others is due to the threshold of stimulation of the vomiting centre being lower in the former.

In the omasum food which is not already in a finely divided or largely fluid state is thoroughly triturated. This is accomplished by the ingesta being pressed into thin layers between the laminae and rasped by the numerous horny papillae which stud the surface of these folds. The contractions of the omasum are slow and powerful; the amount of muscular tissue involved in its action is seen to be very great when we include in our estimate—as we must—the muscular strata of the laminae. The pressure exerted on the ingesta naturally squeezes out a large part of the fluid, which runs down into the omasal groove and so into the abomasum. The water-content of some of the food in the omasum has been found as low as 50 per cent. in apparently normal cases. It is clear that in any case in which the usual procession of ingesta through the stomach is interrupted or appreciably retarded, the omasal contents will undergo continued dessication, and further that the latter process would be even more rapid if contraction of the omasum is not inhibited. It is not at all easy to understand how the food reaches the upper part of the omasum. F. Smith (*loc. cit.*, p. 197) says that “the omasum defies the laws of gravity,” but gives an ingenious account of the mechanism. The writer has found no description which appears

to be based on actual observation of the process. Certain considerations diminish the difficulty of comprehending the action of this curious organ. Its long axis is not horizontal; the anterior end is considerably higher than the posterior. Most of the laminae are oblique, not vertical, and they are so thickly beset with horny papillae as to give them a firm hold on the ingesta. The circular muscular coat is thick and forms a strong pillar at the anterior margin of the omaso-abomasal orifice. The free edges of the laminae are thick; this is due to an increased amount of muscular tissue here. At the neck the laminae have the form of thick muscular ridges. They reach their greatest height in the middle part and diminish gradually in extent toward the abomasal orifice.

No mechanical features of special interest are known in regard to the abomasum. There is no sphincter at the omaso-abomasal orifice. The writer has always found the opening patent in formalin-hardened subjects. But observations show that no coarse food finds its way into the abomasum, and foreign bodies are rarely found there.

Limitation of space permits very brief reference to the intestinal mechanism. The movements of the small intestine are of two kinds—peristaltic waves and rhythmic contractions. The peristaltic waves may take the form of *a*, a slowly advancing contraction moving a short distance, or *b*, a rapid contraction passing along a much greater distance. The former action moves a mass of ingesta a little further along. The latter, the "peristaltic rush" of Meltzer and Auer(32), empties the part of the bowel involved. The second kind of movement, rhythmic contraction, is by far the most common and most interesting mechanical process, according to Cannon(33), who first described it. The process as observed in the dog and cat by means of X-rays is briefly as follows: The ingesta in a certain length of the bowel are divided by contractions into series of fairly uniform segments. A moment later each of these segments is subdivided, and promptly after this division adjacent masses "rush together" and form new segments. This process was seen to

continue for more than half an hour without the food moving along any considerable distance. It has been happily termed "rhythmic segmentation" by Cannon. Variations are observed; thus if the food mass is thick, the division may be incomplete and the segments relatively long. The constrictions also occur near the ends of segments. Secondary division may occur without previous union of primary segments. The rate when the food "string" was thin was 12-22 per minute in the dog, 20-30 in the cat. Hertz(34) found the rate in man to be 7 per minute. The effects of the process are: 1, Food is repeatedly brought in close contact with different parts of the bowel wall; 2, undigested food is thoroughly mixed with digestive fluids; 3, digested matter is thoroughly exposed to the mucous membrane for absorption; 4, the repeated contractions facilitate the flow of blood and lymph. The process was not seen in the rabbit, in which there was instead rhythmic moving to and fro of a mass, rapidly repeated for a considerable period. This observation raises the question whether rhythmic segmentation occurs at all in typical herbivora, such as the horse and ox. Ellenberger (loc. cit., p. 292) recognizes two forms of movement of the small intestine—peristalsis and pendulum movements. The latter correspond to the action noted above in the rabbit, and persist for a considerable time in a stretch of the bowel before the contents are moved on by peristalsis. Cannon did not observe delay in the passage of food through the small intestine, except under experimentally disturbing conditions, *e. g.*, irritation of the colon. Hertz in his observations on man noted retardation only in lead poisoning. This is in accordance with clinical observations that stasis in the small intestine is usually due to mechanical obstruction, whereas in the large intestine it is often primary.

Most of the definite information which we have in regard to the action of the large intestine relates to the dog, cat and man. In 1890 Jacobi observed antiperistalsis in the colon of the cat. Cannon(35) studied the movements of the large intestine of the dog and cat by means of the X-rays. He observed that as soon as a mass of ingesta passed from the ileum into the colon,

a strong contraction passed along the caecum and first part of the colon and carried some of the contents onward. A moment later a strong antiperistaltic wave passed along the right part of the colon and continued till the caecum was filled. The contents of the colon are not normally forced back into the small intestine. The ileo-colic valve appears to be competent, except when a large amount of fluid is introduced into the colon, when regurgitation may occur. This agrees with clinical observations. The action of the first part of the colon is thus like that of the stomach when the pylorus is closed. The contents are forced backward through the advancing constricted ring, and are thus thoroughly mixed and brought into intimate contact with the intestinal mucosa. Later, as the contents accumulate and extend along the colon, a deep, ring-like contraction occurs near the advancing end of the ingesta and almost separates a portion from the main mass. The ring moves along slowly, carrying the portion of ingesta before it. This process is repeated, and the separated masses are carried along by peristalsis. Elliot and Barclay-Smith(36) found in the herbivora which they studied that there was churning movement in the sacculated part of the colon. Each saccule was at times the seat of swaying oscillations, and the degree of sacculation was in proportion to the activity of the churning movement. Little definite information is available with regard to the mechanical action of the caecum and colon in the larger domestic animals. In the ox, sheep and pig the division between these two parts of the bowel is purely conventional, and it is at least probable that there is here antiperistaltic action as in the dog and cat. In the horse the arrangement is quite different. The connection between the caecum and colon is a narrow neck, so that the caecum is a true cul-de-sac with two blind ends. It seems improbable, but by no means impossible, that reflex occurs of contents of the colon into the caecum. The form of the caeco-colic orifice varies in material hardened in situ. In many cases it is slit-like, but not tightly closed; in others it has a narrow oval form, with a long diameter of about 5 cm. and a width of about 2 cm.; in others it is round

and small, but usually easily passable by the finger. When the orifice is found rather widely open, the approach to it from the caecum is funnel-like. The first part of the colon which succeeds the neck of actual origin usually has the form of a sacculation, the convexity of which is dorsal; Schmaltz(37) recently proposed for it the term "vestibulum coli." This vestibule communicates with the larger part of the colon by a constriction which may be orbicular or have a length of 10 to 12 cm. These peculiar features may throw some light on the occasional failure of puncture of the bowel to result in effective removal of gas. There does not appear to be any ground for the suggestion which has been made that material may pass practically directly from the ileum to the colon in the horse (F. Smith, *loc. cit.*, p. 215). The position of the caecal orifices has been misapprehended. The opening into the colon is about 5 cm. lateral to (*i. e.*, to the right of) the ileo-caecal orifice and is usually at a slightly lower level. A large shelf-like fold intervenes between the two, and overlies the approach to the caeco-colic opening. The arrangement can be seen satisfactorily only on frozen preparations or on material which has been well-hardened *in situ*. It would seem that material issuing from the ileo-caecal orifice could pass either downward into the body or forward and downward into the anterior part of the base of the caecum. From the latter it could be carried readily into the colon, but material which has passed into the body and apex of the caecum would have to be brought up to the base before it could enter the colon. It would seem essential for this action—as in the case of the rumen with respect to regurgitation—that the caecum be well filled and that plenty of fluid be present. Clinical experience supports this view of the situation. Comprehension of the mechanism is not facilitated by the fact that the longitudinal bands are largely composed of elastic tissue. Smith expresses the opinion that material does not remain long in the caecum, but Ellenberger says *ingesta* remain in it 18 to 24 hours, and that there occurs here a mixture of remnants of several feeds.

Oscillating pendulum movements probably occur in the sac-

culated ventral parts of the colon as well as peristalsis, but probably only the latter action in the remainder of the bowel. The peculiar arrangement of the terminal part of the great colon favors the occurrence of stasis here. The contents must be moved upward and to the left from the enormous colic ampulla into the narrow funnel-like connection with the small colon, which might be termed the infundibulum coli.

The nervous mechanism of the gastro-intestinal tract and other interesting topics must be excluded from consideration in a short paper dealing only with certain phases of the mechanics of the digestive apparatus.

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A FULL REPORT OF THE INTERNATIONAL VETERINARY CONGRESS IN LONDON WILL APPEAR IN THE SEPTEMBER ISSUE OF THE REVIEW.—A complete and accurate report of the London Congress, from a representative of the REVIEW staff on the ground, will be published in our September issue, that our readers may be in possession, at the earliest possible date, of the happenings in London that affect veterinary science throughout the world.

WILL APPEAR IN THE SEPTEMBER ISSUE.—The advantages of a Sanitary Milk House on the Farm, by Dr. C. R. Potteiger, assistant food inspector of Reading, Pa.

SOME RESULTS OF BLOOD COUNTING ON CATTLE.

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In the spring of 1909, the Office of Poisonous Plant Investigations had at Limon, Colorado (altitude 5,360 feet) a number of cattle, some of which were to be taken during the summer to Mount Carbon, Colorado (altitude about 9,000 feet). Of these there were 13 belonging to the State of Colorado, and 14 belonging to the Department of Agriculture. Inasmuch as some counts which had been made on the blood of these and other animals while at the Experiment Station at Hugo, Colorado (altitude about 5,000 feet), during the preceding four years in connection with other work had indicated that a study of the effect of altitude on the blood of cattle would give some interesting results, it was suggested by Dr. C. Dwight Marsh, who has general charge of the poisonous plant work, that it would be well to take advantage of this opportunity to make some comparative counts. So far as can be learned, little work of this kind has ever been done on cattle, though considerable has been done on human beings.

The cattle had been kept during the preceding winter on the ranch of W. S. Pershing, at Limon. Previous to that they had been used for experimental purposes at the station at Hugo. Some of them had been in the possession of the station for four years, and their histories kept. Some had been owned by the station only since the preceding July, and others had been born there. When first seen in the spring of 1909 (May 22) they were all in good physical condition, and had come through the winter in good shape.

The ages of these cattle varied from less than one to eight years or more at the time the blood counts in the spring of 1909 were made. Some of them had been in good condition for the last year preceding this time, while others had been locoed. At the time the counts were made at Limon only one showed any effects from having been locoed. That was Number 68, a young bull.

Table I gives in tabular form the results of all of the counts made at both Limon and Mount Carbon. The differential counts were made from slides prepared at the time the other counts were made.

At Limon counts on both the red and white corpuscles of most of the animals were made, and blood smears were prepared. One animal died after being taken to Mount Carbon before the number of blood corpuscles could be determined. The counting was done by C. W. Marsh, H. Pershing, and the author, in such a way as to have the work of one person check off that of another. In every case at least two, and in some cases three or four counts were made. All counting was done by means of the Thoma Zeiss diluting pipettes and slides with the Turk ruling. For the red corpuscles Hayem's diluting fluid was used, and dilutions of 1-200 made. For the white corpuscles Toison's fluid was used and dilutions of 1-20 made. With this dilution for the whites there were cases where the lines of the slide were somewhat obscure and difficult to follow, but generally they could be made out with considerable ease.

In counting the red corpuscles, 100 of the small squares were counted, taking them so as to sample the whole field. With the white corpuscles the whole ruled field was counted; viz.: 144 of the large squares. The average of all of the counts made on an animal at one time was taken as the number of the corpuscles, red or white as the case might be, all possible care being taken to avoid error.

At Limon, the counts were made between May 24 and June 9, 1909, by the above mentioned three persons. At Mount Carbon the counts were made during the summer by C. W. Marsh and the writer.

TABLE I.
Showing Blood Counts on Cattle, 1909—Numbers are averages.

Influence of Age on the Number of Red Corpuscles.—It is commonly stated that in human beings the number of red corpuscles is highest in childhood decreases to the time of puberty and decreases in old age.

TABLE II.
Effects of Age on the Number of Red Corpuscles.

No. of Animal.	Under 5	Over 5
	Years of Age.	Years of Age.
I.....	.....	6,472,000
4.....	.....	8,285,000
6.....	.....	8,126,000
30.....	.....	7,088,000
31.....	.....	7,104,000
41.....	.....	8,256,000
84.....	.....	7,156,000
88.....	.....	8,796,000
91.....	.....	6,911,000
92.....	.....	6,850,000
68.....	6,272,000	.....
98.....	8,637,000	.....
107.....	10,706,000	.....
108.....	9,287,000
97.....	9,632,000
112.....	11,802,000
113.....	8,626,000
115.....	8,371,000
117.....	9,100,000
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Average.....	9,159,222	7,504,400

Some of the animals at Limon were rather old, others again were quite young. To test the effect of age, Table II was made. In this the counts on animals made at Limon have been divided into two groups. In one column are placed the counts on all of the

animals under five years of age. As a matter of fact all of them were under four and some of them were less than a year old. In the other column are the counts of red corpuscles of the animals over five years of age at the time the count was made. Their average age was probably eight or more years. There are in this table 9 animals under five and 10 over five years of age. A glance at the table will show a certain amount of uniformity in the counts. Those in column II are in all cases under 9,000,000, most of them considerably under. Those in column I are uniformly higher and with one exception run considerably above eight million. This one exception is that of bull 68, which was located the two preceding summers. In spite of this low count, the average of the counts in column I is 9,159,222, while that for the older animals in column II is 7,504,400. Here is a difference of 1,654,822 in favor of the younger group of animals. Based on the average number of red corpuscles of the younger animals this is a difference of 18 per cent.

Effect of Altitude on the Red Corpuscles.

It is generally conceded that there is a correlation between altitude and the number of red corpuscles, the greater the altitude the larger the number of the corpuscles. Considerable work has been done on the effect of altitude on human blood and some on animals, especially the dog. Most of the results agree fairly well.

The counts of red corpuscles made at Limon ran considerably higher than those usually given for cattle, which were presumably made at lower altitudes. The number of red corpuscles in normal cattle is usually placed at about 6 millions. The results of different investigators vary from 4.2 millions, found by Malassez to 6,847,000 by Storch. To be sure, Storch found greater numbers than this in calves and young cattle. This number is an average of all of his findings.* The average for all counts made at Limon is 8,288,263, or nearly two millions higher than the average count in literature.

* Burnett "Clinical Pathology of the Blood of Animals," 1908, p. 43.

Of the cattle wintered at Limon, 14 were taken in the spring to Mount Carbon, arriving there on June 14th. On 11 of these, counts of the red corpuscles were made at both places. As previously stated, at Limon, all of the counts were made between May 25th and June 8th, while at Mount Carbon the counting was distributed over the rest of the summer, much of it being done in August. The time of the year when the counts were made may be an important factor.

TABLE III.

Blood Count, Limon and Mount Carbon, Colorado. Red Corpuscles, 1909.

No.	Limon.	Mount Carbon.
84	7,156,000	8,845,333
88	8,796,000	7,548,000
91	6,911,000	8,836,000
92	6,850,000	8,778,000
98	8,637,000	11,064,000
107	10,706,000	8,005,333
108	9,287,600	8,292,000
112	11,802,000	8,080,000
113	8,626,666	8,760,000
115	8,371,000	10,904,000
117	9,100,000	8,702,000
Average.....	8,749,388	9,255,878

The counts made at these two places are compared in Table III. Animals which were not examined in both places are not considered in this table. There were two counts at Limon that ran high, likewise two at Mount Carbon that ran high. These were young, vigorous animals. These high counts can not influence the results materially as they will largely balance each other, there being two in each column.

The average of the counts made at Limon (altitude 5,360 feet) is 8,749,388 red corpuscles, and at Mount Carbon (altitude, 9,000 feet) 9,255,490. This gives a difference of 506,400 in favor of the higher altitude, or an increase of 5.8 per cent., an increase considerably less than that reported by workers on human and dog's blood—see Table IV. In this table we have

TABLE IV.
Effect of Altitude on Number of Red Corpuscles.

Author	Subject.	Difference in Elevation, Meters.	Increase in Blood Corpuscles in Percent.	Increase per 100 Meters Elevation in Percent.	Time at Higher Elevation.
Viault	Man	4,392	60.0	1.4	On arriving
Egger	Man	1,800	16.0	.9	4½ weeks
Egger	Dogs	1,800	27.4	1.5	
Egger	Dogs	1,800	6.0	.33	9 days
Raemisch	Man	1,684	26.0	1.5	Acclimatized,
Karcher	Man	789	9.3	1.2	20 days
Sutter	Man	719	14.0	2.0	
Sutter	Dogs	719	24.7	3.5	
Veillon	Dogs	434	5.4	1.3	4 days
Veillon and Sutter	Man	434	6.4	1.8	

computed the findings in terms of 100 meters elevation. A glance at the table will show that there is a considerable variation in the results. There is also a variation in the length of time the individuals had been at the higher altitude when the counts were made. With one exception, however, the findings are higher than those here reported. For individuals which had been at the higher elevation any length of time, the table shows an increase varying from .9 per cent. to 3.5 per cent. per 100 m. elevation. Our counts show only .44 per cent. for the same increase in altitude.

There is one other factor that probably should be taken into account here, that is, the time of the year when the counts were made. Smith and Kilborn, in Bulletin 1 of the Bureau of Animal Industry, U. S. Department of Agriculture, p. 38, state that

around the District of Columbia about seven million corpuscles in winter and five million in late summer or early autumn would be a fair average. Others have stated that there are more corpuscles in late winter and spring than in late summer and early fall. If this is true, we have a possible explanation for this seeming discrepancy. The counts made at Limon were under spring conditions, while those made at Mount Carbon were under summer conditions.

TABLE V.

Blood Count. Early vs. Late Summer. Counted at Mt. Carbon, Colorado.

No.	June and July.	August and September.
82	8,400,000	8,200,000
84 .....	.....	8,845,000
88	7,548,000	.....
91	8,836,000	.....
92	11,432,000	7,893,000
98 .....	.....	11,064,000
107 .....	.....	8,005,000
108 .....	.....	8,292,000
112 .....	.....	8,080,000
113	8,760,000	.....
115	10,904,000	.....
117 .....	.....	8,702,000
Average.....	9,313,000	8,635,000

An attempt was made to test this possible factor in the counts made at Mount Carbon. Some of the counts were made in June, others in July, August and September. The largest number was made in August. In Table V the counts are separated into two groups. Column I gives the counts made in the first half of the

summer, or in June and July. Column II gives the results of the counts made in August and September. Taking the average of these two columns there is obtained 9,313,000 for the first half of the summer, and 8,635,000 for the latter half. Here is a difference of 678,000 in favor of the first half of the summer. That this difference is not due to a larger percentage of young animals in the first column is shown by the fact that of the young animals only two are included in the first column while there are five in the second column. Of the old animals, there are on the other hand more included in the first than the second column.

TABLE VI.
Blood Count Throughout Summer at Mt. Carbon.

No.	June.	July.	August.	September.
82.....	.....	8,400,000	7,608,000	10,568,000
84.....	.....	.....	8,845,000	.....
88.....	.....	7,548,000	.....	.....
91.....	.....	8,836,000	.....	.....
92.....	11,432,000	.....	11,064,000	7,893,000
107.....	.....	.....	8,005,000	.....
108.....	.....	.....	8,800,000	7,784,000
112.....	.....	.....	8,080,000	.....
113.....	.....	8,760,000	.....	.....
115.....	10,904,000	.....	.....	.....
117.....	.....	.....	8,702,000	.....
Average.	11,168,000	8,386,000	8,729,142	8,748,000

Taking the same figures and dividing them by months, the result as shown in Table VI is obtained, and the highest count is in the month of June. As there are only two animals included in the counts of this month, too much stress should not be laid on this result. For the other three months there is no evidence of a progressive change. All that can be said is that the evidence, so far as it goes, points towards a larger number of red corpuscles

in the spring than in the middle or late summer. If such is the case, then the effect of altitude is much greater than would appear in Table III. In considering Tables V and VI, it must also be remembered that the animals had just been brought from a much lower altitude and perhaps were not yet acclimated when the June counts were made.

SUMMARY.

1. In the older animals there was a decidedly smaller number of red corpuscles than in the younger. There was an average of 9,159,222 in the younger and 7,504,000 in the older group, or a difference of 1,654,822.

2. The animals when taken from an altitude of 5,360 feet to an altitude of 9,000 feet showed an increase in the number of red corpuscles. The average number was 8,749,388 at 5,360 feet, and 9,225,878 at 9,000 feet, the difference being 506,492. The counts at the lower elevation were made in early summer, while those at the higher altitude were made largely in midsummer. Had the counts at the two altitudes been made at more nearly the same time the difference might have been greater.

3. The counts at Mount Carbon show a larger number of red corpuscles in early than middle or late summer.

NUMBER OF HORSES AND MULES STILL INCREASING IN U. S.—The estimates for January 1, 1914, indicate that there are 20,955,000 horses and 4,447,000 mules on farms in the United States, an average annual increase of about 1.4 per cent. over the number shown by the census of 1910. It is estimated that the average farm price of horses has increased from \$108.19 in the census year to \$109.33 in January, 1914, and in the case of mules from \$119.84 to \$123.84 in the same period. On this basis the total farm value of horses is \$2,291,000,000 and of mules \$550,697,000. The total estimated farm value of these animals is therefore \$2,841,697,000, which is an increase of \$191,454,000 over the census year and represents an annual increase of wealth from these sources of \$47,863,000.

BOVINE TUBERCULOSIS.*

By E. C. SCHROEDER, M.D.V., SUPERINTENDENT OF THE EXPERIMENT STATION OF THE U. S. BUREAU OF ANIMAL INDUSTRY, BETHESDA, MD.

I am here to-day to talk to you about tuberculosis in the place of a man from Washington, from whom you expected an address on hog cholera. This is a twofold substitution. I realize the conditions, and hope, after I have concluded, you will not have a double reason to feel disappointed.

So much attention has been given in recent years to the subject of my paper that it almost may be said to have been worn threadbare, but I believe you can listen to me with patience if you will bear in mind that bovine tuberculosis, with the possible but by no means proved exceptions of cholera among hogs and infectious abortion among cattle, remains to-day the commonest and most expensive evil with which our animal industry is afflicted, and that, apart from the success some of us may have had in cleaning individual herds and small areas where cattle are not numerous, our efforts to control and eradicate the disease have made no material impression on its wide dissemination and frequency.

The phase of the subject I specially wish to talk about is eradication viewed as a purely economic problem. As a condition affecting the public health, the claim seemingly is no longer tenable that the occurrence of tuberculosis among food animals is urgently important, not because bovine tubercle bacilli are harmless for human bodies, but because we have learned how to protect human health against exposure to them. Meat products from tuberculous animals, even before our meat inspection activities began, probably never were a serious menace to human health in this country where most meat is cooked before it is eaten, and milk from tuberculous cows can be made safe by pasteurizing it, and pasteurization is so urgently needed to check other

* Presented to the Massachusetts Veterinary Medical Association at Boston, February, 1914.

and greater raw-milk dangers than those chargeable to the contamination of milk with tubercle bacilli that the efficiently supervised pasteurization of all milk should be universally demanded.

If I were asked to choose between the properly pasteurized milk of tuberculous cows and the best raw milk distributed by city dairies, for my own use or for use in my family, I would select the former, because I know from hundreds of personally conducted tests that pasteurization at 140 degrees F., for 20 minutes, makes the milk of cows affected with udder tuberculosis innocuous for guinea pigs that are exposed to it through intra-abdominal inoculation.

The efforts that have been made to control and eradicate tuberculosis among cattle may be summarized as follows: Tuberculin testing and the slaughter of reacting animals; the Bang method; the Ostertag method; immunization or bovo-vaccination, and the Ujhelyi method.

Tuberculin testing and the slaughter of all reacting cattle in a region where tuberculosis is an uncommon disease may be a hopeful procedure, but to those who know that the best obtainable estimates justify the conclusion that we have over 2,000,000 tuberculous dairy cows in our country, a large proportion of which are only slightly affected and may remain a real source of profit for years to come, and that we have never been less in a position than now to sanction the destruction of cows that are capable of producing healthy calves, it must have the character of a wasteful extravagance that should be adopted only as a last expedient.

Our population has increased rapidly, but the number of our milch cows is no greater now than it was seven years ago, and during the last seven years the number of our other cattle has declined from 51,566,000 to 36,030,000, and is now lower than at any time during the last fourteen years. Coupled with this, as we would naturally expect, the price of cattle, dairy cows included, is higher than ever before.

Furthermore the eradication of tuberculosis among cattle is hopeless without the friendly co-operation of the owners, and

this, I am convinced, cannot be secured by those who advocate the slaughter of every animal that reacts with tuberculin, unless sufficient money can be made available to pay full value for the animals destroyed.

The Bang method requires constant watchfulness and considerable labor, and is open to the objection that calves artificially raised on heated milk, or milk that has undergone modifications of various kinds through its exposure to unnatural conditions, especially such as result from the multiplication of bacteria, do not thrive as well as naturally raised calves. With a series of experiments made with one of my assistants, Dr. Geo. W. Brett, on the relative value of raw, pasteurized and boiled milk as a food for unweaned animals, but in which guinea pigs and not calves were used, I convinced myself that the artificial feeding of unweaned animals constitutes a greater and longer enduring handicap than it is generally recognized to be.

It may be interesting to you to add that the boiled milk in the experiments referred to gave decidedly better results than either the raw or the pasteurized, and that the available data on the use of raw and boiled milk as a food for infants and young animals, when the milk of a foreign species is used, are in favor of boiled milk.

The high price of labor, especially labor guided by trained intelligence, presents economical difficulties that stand in the way of the proper application of the Bang method in our country.

The Ostertag method abandons the tuberculin test for adult cattle. It seeks to control tuberculosis by the removal of physically evident cases of the disease from the herd and the exclusion of recently weaned animals that react with tuberculin. The calves are reared by healthy foster mothers or are artificially fed on sterilized milk. This method may be satisfactory for conditions as they are in Germany, a densely populated country with not less than 40 per cent. of its cattle affected with tuberculosis, and which must use the utmost caution in the adoption of measures that relate to the sources of its food supply; but in the

United States it does not seem to merit serious consideration. The percentage of tuberculosis among our cattle is too low to permit the continued exposure of healthy animals to those that disseminate tubercle bacilli in the absence of sensibly determinable symptoms of disease.

Bovo-vaccination and other attempts to immunize cattle against tuberculosis by injecting them with tubercle bacilli or products of tubercle bacilli have not given results that justify their use, and nothing encouraging has developed in this field since the Federal Bureau of Animal Industry, in 1912, in a report on "The Vaccination of Cattle against Tuberculosis," published the following statements:

"Very careful autopsies of cattle, treated by intravenous inoculations of tubercle bacilli according to the methods of Von Behring and Pearson, show that the more or less attenuated tubercle bacilli that engender immunity against tuberculosis rarely leave the treated subject wholly free from lesions that can be accounted for in any other way than as due to the pathogenic activity within the animal's body of the injected bacilli."*

"The only conclusion to which we are entitled from this work and the careful study of the writings of others on the subject of protective inoculation against tuberculosis may be stated as follows: Though results have been obtained which are very encouraging to the investigator and which prompt him to strive onward with renewed vigor and hope, no system of bovo-vaccination has reached a stage at the present time that justifies its use in common practice."*

We now come to the method of Ujhelyi, in which healthy nurse cows are used for newly born calves when this is practicable, and in which the calves are left with their infected dams until they are weaned when healthy cows are not available and then tested with tuberculin. The reacting calves are slaughtered.

This method is particularly interesting to me because of its resemblance to a method I planned about ten years ago, before I knew of Ujhelyi's interest in the subject, and have given a careful test at the Experiment Station.

* B. A. I. Circular No. 190.

I took three factors into consideration: first, that congenital tuberculosis occurs rarely among calves; second, that the frequency with which young cattle are affected with tuberculosis, even in a tuberculous environment, compared with the frequency of tuberculosis among older cattle, is very low, and, third, that the young of tuberculous cows that have lived in a tuberculous environment until they are weaned, if they fail to react with tuberculin several months after their removal from exposure, provided they are subsequently protected against exposure, remain permanently free from tuberculosis.

I would like to give you precise statistics concerning these three factors, and regret that I am unable to do so. That congenital tuberculosis is extremely uncommon, though seemingly commoner among cattle than persons, requires no lengthy argument. At the Experiment Station, in the course of twenty years, among the numerous calves born of tuberculous cows in all stages of the affection, we have had four cases of true congenital tuberculosis. With one exception the mothers of the congenitally diseased calves were affected with completely generalized tuberculosis that had extended to and attacked their reproductive organs. The one exception was the calf of a cow affected with advanced, generalized tuberculosis without discoverable lesions in her reproductive organs. The examination of many other calves born of tuberculous cows in practically the last stages of tuberculosis, and the inoculation of tissues from such calves into guinea pigs, failed to reveal either tuberculous lesions or the presence of tubercle bacilli.

The available data on the relative frequency of tuberculosis among recently weaned calves and older cattle are meager and contradictory. Abattoir statistics leave us in a quandary about the true meaning of the word calf. Is it an animal that has lived a few weeks or does it include young cattle up to and older than six months? In a general way such statistics show that tuberculosis among animals classed as cattle is from 70 to 80 times as common as among those classed as calves. Hutyra and Marek, in their excellent work on *The Pathology and Therapeutics of*

the Diseases of the Domestic Animals, give statistics, taken from the official report on sanitary police control of abattoirs of the German empire, which show that the proportion of calves condemned on account of tuberculosis is less than a fraction of a per cent., while the proportion of cattle condemned is about 20 per cent., and that the percentage of condemnations among calves is only about half as great as among goats, notwithstanding that, in America, goats are so rarely affected with tuberculosis that many persons believe them to be naturally immune, at any rate against such exposure to tubercle bacilli as they are likely to encounter under economic conditions. Tuberculosis, we must remember, is a disease that may arise from a single, short-lived exposure to infection, but which usually arises from very severe, frequently repeated or long-continued exposure.

At the experiment station we found that about 10 per cent. of the calves produced by tuberculous cows, and kept in an intensely tuberculous environment the first three months of their lives, become infected with tuberculosis. This percentage is undoubtedly much higher than it would be among the calves in ordinary tuberculous herds, because the exposure at the station included, under otherwise far from sanitary conditions, association with cows in the last stages of generalized tuberculosis, some of which were proved by microscopic and inoculation tests to be expelling virulent tubercle bacilli from their mouths, noses, bowels and udders.

It may be well to say here that calves permitted to roam at liberty in a stable or a field with cows, or a single cow, affected with udder tuberculosis, almost invariably become infected, and that actual tests proved that a single feeding from a tuberculous udder, or artificially, from a pail, with milk from a tuberculous udder, is sufficient to cause tuberculosis in the otherwise unexposed calves of healthy mothers.

As to the development of tuberculosis later in life among the progeny of tuberculous cows, or among cattle that failed to react with tuberculin three months after their removal from an

exposure in which they were born and remained until they were weaned, the station has records of more than a hundred such animals that were kept under observation for varying periods of time, some of them more than six years, without a single instance to prove that tubercle bacilli, possibly taken into the body early in life, had remained dormant three months or longer and subsequently caused disease. These animals were intentionally kept under observation to determine whether Von Behring's theory, "that tuberculosis, irrespective of the time of life it reveals itself by symptoms, is commonly due to tubercle bacilli taken into the body during the milk-drinking period," is in any sense true of tuberculosis among cattle.

The fact that Von Behring's theory does not seem to apply to cattle should not be too hastily used as an argument that it has no significance respecting the etiology of human tuberculosis, because the manner in which different species of animals are affected by tubercle bacilli varies enormously, and what may not be true of tuberculosis among cattle may be true, in part at least, about tuberculosis among some other species of animals.

Now, using the three factors I have tried to define, I based an experiment concerning the derivation of a healthy from a tuberculous herd of cattle on them, the plan of which was as follows:

a. Calves born of tuberculous cows or of cows in a tuberculous environment to be left with their mothers about three months.

b. At the end of three months the calves to be moved to an environment free from tubercle bacilli.

c. After the passage of three or four months in a healthy environment, the calves to be tested with tuberculin. If all the young animals exposed to each other failed to react, they were regarded as eligible for introduction into a tuberculosis-free herd. If any one or more of a number of young animals exposed to each other reacted, or it was doubtful whether a tuberculin record should be read as clearly positive or negative, the non-reacting animals were separated from the reacting or doubtful animal or

animals and placed in a second clean environment and tested again, after the lapse of not less than three months, before they were regarded as eligible to enter a healthy herd.

It is questionable whether the second test is really important, because, among over a hundred animals so far handled in accordance with the plan, not one that failed to react with the first test, and was subsequently protected against exposure to tuberculosis, reacted with a second or later tests, and no such animals among the many that were sooner or later examined post mortem showed lesions of tuberculosis.

The cows from which the calves were derived formed two herds, one of which was composed entirely of tuberculous and the other of tuberculous, bovo-vaccinated and healthy cattle. The latter constituted an experiment on the subject of bovo-vaccination, and the infection in it was severe enough to cause the development of tuberculosis among some of the bovo-vaccinated and among twelve of fourteen healthy cattle.

The records of the experiment prove that by following the outlined plan the progeny of an intensely tuberculous herd of cattle can be used to form a healthy, vigorous, profitable herd of young animals, with no great expenditure of labor or money. In the experiment, after the calves were separated from their tuberculous mothers, they were placed in small pastures, and were given no better shelter during winter than small, cheaply constructed stables, into and out of which they could wander at liberty.

The plan does away with the labor and attendant evils of artificial feeding. It may be associated with a somewhat greater percentage of tuberculosis than we have among calves artificially fed on heated milk, but, when we deal with calves produced in herds from which physically evident cases of tuberculosis have been eliminated, cases which should be retained in no herd, the possibly greater losses from tuberculosis will be very small and more than balanced by the greater losses from other causes that are apt to occur among artificially fed, unweaned calves.

In the practical use of the plan I would advise, as the first

step, the removal of all physically evident cases of tuberculosis from the herd, and as a second step the separation of the animals that react with tuberculin from those that do not react, unless it is not intended to make the uninfected portion of the tuberculous the nucleus for the clean herd. In this latter case I would not attempt to distinguish between apparently and actually healthy cattle. In the case it is decided to make the uninfected members of the herd the nucleus of the clean herd, it should be borne in mind that a negative tuberculin test is satisfactory evidence for the absence of tuberculous infection only in animals that have not been exposed to tubercle bacilli for several months.

Tuberculin does not record the presence of tubercle bacilli in the body; it records the presence of changes caused by tubercle bacilli, and an interval of time, the length of which we do not know as precisely as we do the lengths of the periods of incubation of some infectious diseases, elapses between the entrance of tubercle bacilli into the body and the development of tuberculosis. Those who attempt to clean herds without keeping this fact in mind, may find it difficult to explain why their efforts, with the first two or three tuberculin tests too far apart, do not yield satisfactory results.

Following the attention to the original herd, the rest of the plan has been sufficiently defined to require no further description.

This is the method for controlling and eventually eradicating bovine tuberculosis I propose under the existing conditions in our country, and in doing so I recognize, of course, that I am proposing something which is not wholly free from labor and expense. But without a fight we cannot hope to win a battle, and it is worth a great effort to be rid of a preventable disease that reduces the profits from every herd in which it occurs, which may enter any herd it has not yet reached at any time, and which is conservatively estimated to cost the nation considerably more than \$20,000,000 per annum, or about double the total estimated farm value of all the dairy cows and other cattle in the State of Massachusetts.

PYO-SEPTICEMIA OF SUCKLINGS.*

BY CARL F. DAVIS, V.M.D., RUMFORD FALLS, ME.

Syn. Pyemic and septic arthritis; joint-ill, navel-ill and limping.

It is an acute, contagious, infectious disease of new-born animals occurring in the first days of life and not later than the first four weeks. Characterized by purulent inflammation of the joints and general pyemic manifestations. It develops as a result of umbilical infection, exceptionally as a result of intrauterine infection of the foetus.

History. In former times all affections of new-born animals were combined under the term limping or navel-ill, in the course of which lameness and disturbance of walking was present. We can now better differentiate the various diseases and the following are now described in our best text-books: Pyemic or Septic Articular Inflammation, Fatty Degeneration of the Body Muscles, Articular Rheumatism and Muscular Rheumatism, Rickets, Tetanus, Cerebro-Spinal Meningitis, Tabes.

Various other diseases to which sucklings are liable, as intestinal catarrh, broncho-pneumonia, pleuro-pneumonia, general debility, weakness in extensor muscles of the extremities, etc., are also popularly known as limping.

Occurrence of Pyemic Arthritis. The disease occurs principally in sucking colts and sucking calves, less frequently in sucklings of other species. In some of the breeding districts it attains not infrequently an enzootic character. The best opportunity for the spreading of the disease is present in the studs or dairies, where all of the new-born animals may become affected, and as a result the breeding industry is endangered to a great extent.

* Read before the Maine Veterinary Medical Association, at Rockland, July, 1914.

Etiology. The results of various investigations appear to indicate that the disease develops as a result of infection through the umbilicus with various micro-organisms. According to Leraye and Delmer, the organisms implicated are on the one hand the bipolar bacillus of hemorrhagic septicemia and on the other hand a strong virulent variety of the colon bacillus. The latter preparing the way for the pathogenic action of the bipolar bacillus, as the injection of both bacteria under the skin of a calf produces the disease, while the bipolar bacillus alone causes only a local inflammation. In the first case the colon bacillus remains at the point of inoculation, while the bipolar bacillus passes into the blood. Older writers claim that it may be transmitted; although the possibility of this does not seem to have been proven, yet it may easily happen that a certain number of foals may have a predisposition to pyemic polyarthritis, in so far as they are burdened with a low vitality and feeble constitution, which may be transmitted from their mothers. Other authorities have obtained streptococci and staphylococci from organs of affected colts. Whether these bacteria are the original causative factors of the disease or whether they play only a secondary part is not known.

The *natural infection* results mostly through the torn or not yet closed umbilical vessels, immediately after birth or exceptionally during birth.

The stump of the loose, juicy, umbilical cord which is no longer nourished, as well as the blood present on the torn end of the cord, present a suitable medium for the propagation of the micro-organisms, until drying of the stump has taken place. Bacteria which reach the surface of the stump find favorable development in the thrombi inside of the vessels. Then they penetrate along the thrombus, pass the navel ring and finally spread even in the abdominal portion of the umbilical vessels.

The extrauterine infection which causes the disease in the majority of cases occurs through the soiling of the umbilical stump with contaminated straw immediately after birth, as well as by coming in contact with the stable floor containing patho-

genic bacteria or else with the infected hands of the attendants. Infection accumulates in the stable from the excrements of previously affected animals and as a result of this those that are born later are more exposed to infection. In this way the disease which was at first sporadic may later occur with greater frequency.

PATHOGENESIS.—The bacilli which enter the umbilical veins commence to multiply in the coagulated blood of these vessels, on the one hand cause the thrombus to break down and on the other produce an inflammation of the intima and probably also of the external layer of the walls of the vessels. The breaking down of the thrombus progresses gradually inward until it reaches the end, when the infection may come in contact with the liquid blood contained in the same vessel, or in the portal vein, coming in direct contact with the circulating blood. Small particles of the softened thrombus may be carried off by the circulating blood, and with these the bacteria may enter the free blood circulation. They are taken either to the liver or with the blood of the vena cava into the general circulation. Certain organs appear to have a special predisposition for attacks by the micro-organisms circulating in the blood. Of these the lungs and liver should be mentioned first, and in addition metastatic inflammations develop frequently on the synovial membranes of certain joints. In acute cases of the disease the flooding of the blood with pathogenic bacteria, as well as the inflammatory processes which develop at different parts of the body, cause the death of the animal. In some cases the disease process appears to turn toward recovery and the bacteria of hemorrhagic septicemia disappear from the blood, but the toxins have in the meantime exerted a paralytic action on the cells by which the resistance of the animal has been reduced to such an extent that other bacteria, especially the bacillus of pseudo-tuberculosis, may attack the tissues of the body and produce an inflammation of the lung tissue. The disease may turn to a chronic course and these manifestations are often associated with the pre-existing infection.

ANATOMICAL CHANGES.—In some of the acute cases the umbilicus is swollen and dense. The borders of the umbilical ring are infiltrated or ulcerated, and an incision often reveals an abscess lying on the abdominal wall. The umbilical vein, also one or both umbilical arteries, are greatly thickened, show degeneration of various degrees and often contain blood coagulum or are liquefied to a thick, fetid mass. In case the inflammation has extended to the adjacent peritoneum, the abdominal organs lying close to the affected areas usually show adhesions by fibrinous pseudo-membranes. All these changes may occur without an affection of the umbilicus. Thrombi may also be found in the portal vein, liver, vena cava and aorta. The internal organs present indications of an acute blood infection in the lungs, sometimes showing areas of broncho-pneumonia. Metastatic abscesses occur in many parts of the body, especially the lungs, when they are always associated with a bronchial catarrh; sometimes with a fibrinous or purulent pleurisy. Purulent inflammation is found in the majority of cases in the joints of the extremities, most frequently in the hock and knee joints. All parts of affected joints show various stages of disease and even the bone, tendons and muscles surrounding them may show infiltration, degeneration or abscess formation. (Dr. Meyer.)

In peracute cases the changes are less conspicuous and usually point to general septic infection.

In chronic cases, which are most often seen in calves, the lungs are diseased, and there often exists pericarditis, fibrinous or ser-fibrinous pleurisy, caseated lymph glands, etc.

The carcasses of animals dead from the disease are always greatly emaciated and show manifestations of a general anemia and cachexia.

SYMPTOMS.—The symptoms usually appear inside of 24 to 48 hours after birth; exceptionally somewhat later, and in rare cases the animals may be born affected with it. In some cases the symptoms of local affection of the umbilicus precede the general affection. It swells, becomes sensitive and feels warm.

These symptoms may subside after a few days of appropriate treatment, but in the majority of cases the local inflammatory processes increase in severity, and symptoms of a general septic infection develop, sometimes rapidly, in other cases gradually. The general affection is indicated by symptoms of a general febrile condition. The animals lose their desire to suck, become depressed and dull, and lie almost continually. The body temperature is elevated and pulse and respiration accelerated. This condition is soon followed by symptoms indicating a metastatic inflammation in some of the internal organs.

Inflammations of the joints make their appearance most frequently and earliest. One or more joints, preferably of extremities, swell, become warm, painful and tense; while the surrounding connective tissue is edematous. These swellings may disappear, but more often a fluctuation appears and they break at certain points. The discharge is great at first and of a tenacious purulent form. The motility of the affected joints is interfered with by the pain and tense swollen condition. The animal does not support the body with the affected extremity and protect it from touching the floor.

Symptoms showing disturbances of the digestive organs are hardly ever absent. Severe colicky symptoms may appear. The constipation, which is at first present, is followed by diarrhoea, the animals passing first light, later dark colored, very fetid, fluid feces. The feces soil parts around anus and later the excrements and urine are passed involuntarily.

In the meantime, the animals become greatly emaciated, they lose their strength, the eyes are sunken deep into the orbits, the action of the heart becomes accelerated and weak, the body temperature drops below normal, the extremities, the face and the ears become cold, the body is covered with perspiration, and finally the patients die, with symptoms of convulsion or without any struggle.

In the presence of an inflammation of the brain or in affections of the lungs in this disease we see the average symptoms that usually occur in these conditions.

COURSE.—Very acute septicemic cases result in death in three or four days. Other cases become chronic and last for several weeks.

The percentage of mortalities varies with the different outbreaks; as a rule, however, it amounts to over 50 per cent., and only in calves appears somewhat more favorable.

DIAGNOSIS.—The symptoms of this disease are so well marked that it is easy to differentiate it from any other. The acute septicemic form may however be confused with white scours of sucklings, but from the other forms of the disease the latter may be distinguished by the absence of lesions in the lungs and joints.

TREATMENT.—The inflammation of the umbilicus should be treated according to the rules of surgery, by disinfection of the wounds and, if necessary, by opening of the swellings. The commencing inflammation of the joints may be treated by injection with gray mercury ointment. However, if the joint contains a great quantity of exudate this should be removed and joint cavity disinfected. In the presence of a general infection the treatment can only consist in the systematic internal administration of stimulants; further, in controlling the gastro-intestinal catarrh which may be present. At the same time, appropriate nutrition should be provided for the patient and affected animal kept in a moderately warm, clean and airy place.

Gott recommends for colts intravenous injections of collargol (80 gr. of a one-half per cent. solution for three days, successively), while Bernhardt uses ichthargan in one-tenth-one-fifth per cent. solution.

PREVENTION.—The infection of sucklings may be successfully controlled by scrupulous cleanliness in the stables, cleaning of the genital organs of the mother animals and disinfecting the fresh umbilical stump when possible.

DR. J. A. DRESSBACK, of Stanberry, Mo., in renewing his subscription to the REVIEW, writes: "I am enclosing draft for \$3 for next year's subscription; this is 27 times. Keep her coming. Success to you!"

THE BEST OF FORTUNE FOR THE ARMY VETERINARY SERVICE BILL, CROWD BEHIND IT AND FINISH THE WORK IN THE SENATE.

By GARRISON STEELE, M.D., D.V.M.

“The ripeness or unripeness of the occasion must ever be well weighed; and generally it is good to commit the beginnings of all great actions to Argos with his hundred eyes and the ends to Briarius with his hundred hands; first to watch and then to speed.”

Bacon’s Essay “Of Delay.”

“Hope springs eternal in the human breast;
Man never is, but always to be blest.”

Campbell’s “The Pleasures of Hope.”

There is only one more thing to do for the Army Veterinary Service Bill to make it a law, and that is to get it passed on the floor of the Senate. All the other stages of the legislation are over. It passed the Military Committee of the House unanimously early in February; on the floor of the House, without a vote against it, June 29th, and it was favorably reported to the Senate by the whole Senate Committee on Military Affairs on June 26th. Of course it is now on the Senate calendar waiting to be called up on the Senate floor. At least four-fifths of the work of getting the bill through may be said to be over.

There are, however, two dangers: First, the Senate calendar is loaded with bills and it will be difficult to get the measure called up; second, it is a perplexing question what will be the fortune of the bill even if it is called up. Will there be an attempt to amend it? Will it be blocked?

That depends upon the electromotive force in the souls of the friends of the bill all over this continent. The legislators in Washington are very responsive to pressure upon them from all parts of the country if they are persuaded the desire for the

passage of the bill is genuine and hearty. We could give numerous instances where, within the last two years, men in the House and Senate who were opposed to this legislation suffered a change of heart because they found that their constituents meant what they said when they told them the bill should pass.

This is a call to arms for the last, short, sharp struggle to get the bill passed on the Senate floor. We have always said that we would fight this thing through "to the last ditch." We have reached that ditch. The last piece of work is before us. The time has come when every veterinarian who has a drop of missionary blood in his veins must join us in winning in the Senate. Write, telegraph or interview your Senator in the interest of the bill, H. R. 4541—the House bill and the Senate bill are now one, and there is only the one number to mention, that is H. R. 4541.

In this connection we submit to the profession an excerpt taken from *The Army and Navy Journal* for July 4th, and our reply to Senators Hitchcock and Thomas, who, in the "Minority Report," have had the temerity to oppose the bill:

ARMY VETERINARY SERVICE.

The House, on June 29, passed without amendment H. R. 4541, to consolidate the Veterinary Service, U. S. Army. This bill was briefed in our issue, February 7, page 726.

In the Senate on June 26 favorable report was made on S. 4331, which is the same as the House measure. The bill provides for sixty-two veterinarians, the number now in the service, and their commissioning, beginning with the grade of second lieutenant, upon the passage of an examination as to physical, mental and professional qualifications. Promotion is made after five years' service to the grade of first lieutenant, and after fifteen years' service to the grade of captain, upon the passage of a satisfactory examination. The bill also provides for commissioning the veterinarians now in the service according to the length of service upon passing a prescribed

practical professional examination as to fitness for mounted field service. A reserve corps similar to that of the Medical Department is provided for, from which appointment by commission are to be made to the veterinary service. Such reserve veterinarians must be graduates of a recognized veterinary college or university and have passed a prescribed examination. The report says:

"The United States appears to be unique in the fact that we are the only one of the great Powers which has not given rank and commission to the veterinarians in the Army, although we have heretofore provided for commissioned officers in the Dental Corps, to chaplains and to paymasters.

"With 22,522 horses and 10,897 mules in the Army, and the cost of such animals increasing every year, there should be some one having authority to prescribe proper treatment to sick or diseased horses, or in cases of epidemic, and to prevent losses which are bound to ensue from such causes where there are not competent professional veterinarians in the Army. The better class of graduates of veterinary schools are not now attracted to the service in the Army, where they do not have power to recommend treatment to animals and to know that such recommendations will be carried out. Veterinarians now in the service are nothing more than contract civilians and have no control of any sort over the animals they are expected to protect. They cannot even direct a stable orderly to carry out their wishes in the care of animals. The increase in cost of this service under the bill will approximate \$31,000, due to increase in pay and for length of service.

"General Wotherspoon, Chief of Staff, appeared before the sub-committee to which the bill was referred and stated that the War Department and he himself were unequivocally in favor of the bill and recommended its passage."

Messrs. Hitchcock and Thomas, in the same report, give their minority views as follows:

"We regret that we cannot join our colleagues on the committee in favorably reporting S. 4331. This bill is the product

of fifteen years of agitation, carried on very largely by the American Veterinary Association, having some 3,000 members scattered over the country. They originated it, they have advocated it, and they have pushed it because of the advantage it would bring to the veterinarians who become its beneficiaries. It involves an increase in the cost of the veterinary service of about thirty-seven per cent. It makes some increase in the number of men employed as veterinarians and inspectors, but it makes a much larger increase in pay and in ultimate cost to the Government by giving to some the rank of officers and by retirement with official rank. It is another step in the direction of loading down the military service with civilian attachments.

"It is easy to argue that these changes work for efficiency in the Army. Perhaps they do to some extent, but we think the claim is largely exaggerated, and that the real motive is to get a permanent place on the government pay roll. If this bill passes we will have the spectacle of Army veterinarians retired at the age of sixty-two, practicing their profession comfortably and enjoying the government retired pay. There is a reason for retiring officers at a certain age and giving them retired pay, because their military service has unfitted them for any practical walk in life, but in our opinion it is a bad practice to take professional men and treat them in the same way. They do not need the benefits of retirement on pay any more than professional men in civil life need such assistance."

REPLY TO MINORITY REPORT OF SENATORS HITCHCOCK AND THOMAS.

We have great respect for the expression of thought of the opponents of this legislation and for the honesty of their opinions. Though their words have in them the ring of conviction, the opponents are in error in their statements; they are misinformed as to the intents and purposes of this bill; and they are looking at the measure from too low an altitude, where their vision is confined to what may appear to be a merely ephemeral aspect of the bill. We wish, therefore, to make a short reply to their report and to take up the statements *seriatim*:

1. Though the measure came into being through the instrumentality of The American Veterinary Medical Association, with its three thousand members, its real origin was in the hearts and minds of the tens of thousands of veterinarians in the national, state and city association throughout the continent. We admit that the bill crystallizes the united thought of this large body of men and that the extent of support of the plan has greatly increased each year for thirty-five years; but we submit that the main purpose of the bill is betterment of the public interest. We constitute with our clients a large part of the body politic, or the voting population, and we are sure that it is our bounden duty as citizens to do our best for the common weal, for the national good, in every way that our work touches the life of the nation, we deny that our motives are not as patriotic as those of legislators who represent us in the Senate.

2. The Minority Report is in error when it says the bill makes an increase in the number of veterinarians in the army. The Majority Report is correct. There is no increase involved.

3. Senators Hitchcock and Thomas refer to the insignificantly small increase in cost involved long enough only to deny the benefits of the outlay to the Government. In the Hearing before the Sub-Committee, when Senator Hitchcock was present, Major-General Wotherspoon, Chief of Staff, expressly stated that the small increase in cost was warranted by the better men that would be obtained. If the War Department wants high intelligence put into its veterinary work, why, in face of this expert testimony, should the Minority Report question the truth expressed by this officer? Was he not honor bound to speak the truth? He said that the small increase in cost would bring better men to the army veterinary service and that the value of the work done would more than cover the small increased cost. His unequivocal statement cannot be reasonably questioned.

4. The Minority Report goes on to say that the commissioning of veterinarians is another step in loading down the military service with civilian attachments. It is a mistake to suppose, as Senators Hitchcock and Thomas evidently do, that

the physician who keeps up the health of the men and the veterinarian who keeps up the health of the horses is not about as much a necessary part of the army organization as the soldier and his commander. The provisions for the health of man and beast are as vital to the organic life of the military establishment as the fighting element; for military statistics show everywhere that in the past most of the deaths of man and beast have been caused not by the bullet but by disease. Every part of that complete military organization which depends for efficiency on high intelligence should have equal consideration under our military laws. Civilians are out of place in the army and that is the very reason why the veterinarian should be given his proper military place in our army as he is given in the army of every other military power on earth but ours. This is the intention of the bill.

5. The Minority Report says that if the bill passes we will have the spectacle of retired army veterinarians at the advanced age of 62 years practicing while enjoying a government pension. The spectacle would rather be that of men infirm from having given their lives from their 21st year to their 64th in the service of the government now useless because they have had to go with their regiments in every clime and experience the rigors of army life the same as their brother officers. Do these Senators believe that communities into which army doctors retire would call infirm and worn out men for medical attendance? This is the day of young men. The aged doctor is not wanted.

6. Senators Hitchcock and Thomas in conclusion say that aged professional men in the army do not need the benefits of retirement on pay any more than professional men in civil life, because they are not exposed to the dangers of military service. Do not professional men like the physician and the veterinarian have to go with their regiments wherever they go? Are they not bound hand and foot in the military organization? The veterinarian is with his regiment in its campaigns. It is a logical conclusion that he should not be denied the benefits of retirement any more than his military comrades.

STERILIZATION OF MILK.*

BY OTTO G. NOACK, V.M.D., STATE MEAT INSPECTOR, READING, PA.

One of the most perfect foods provided by nature for the newly-born we find in the milk produced by the mammary gland of the maternal mammal. The young grow, thrive and develop best by nature's own compound. The milk of all mammalia is similar in its composition with a slight variation as to the contents of albumen, milk sugar or fat.

With the recognition of its food value and the cheapness of production, milk soon became an economic factor in the human household. That the milch cow became the provider of this food for the human family was a matter of economics, because a cow could be made to produce larger quantities of this valuable fluid cheaper by far than any other animal.

In the course of time, it became apparent that certain dangers were connected with the use of milk. It soon was shown that the milk was a good and easy vehicle to transmit diseases from animal to man, and from man to man just as well. Furthermore, it was discovered that from contaminated milk came many infantile ailments, especially diarrhea, caused by the bacterium *coli*.

Not to lose such a valuable adjunct of food for the human family, many methods were introduced to destroy, or at least lessen, the causes of these dangers in the milk.

The methods naturally consisted first in the use of chemicals, because the disinfectants had been found the best germ killing agents, but had to be abandoned on account of their danger to the health of the human being; although even Von Behring recommended one drop of formaldehyde to a quart of milk—

* Read before the Schuylkill Valley Veterinary Medical Association, June, 1914.

sufficient to destroy all germ-life, and not strong enough to do any harm to the infant's system.

How innocuous for the customer by the conscientious vendor, but how disastrous in the hands of the unscrupulous dealer, who would not care if he added 2, 3 or more drops to the quart.

Another method applied was the use of electricity or the ultra-violet rays to destroy the pathogenic micro-organisms. No matter how beneficial the modus operandi was, the expense made its use prohibitive, the heating process alone seemed to be practicable, and, from an economic point of view, feasible, although having some disadvantages. The heating processes used were sterilization and pasteurization.

Pasteurization, if not done properly in accordance with the rules promulgated by the authorities as to the degree of heat and length of time of exposure, might as well not be undertaken at all, because it only becomes a deception of the customer, without any safety. This shows that reliable pasteurization can be done only under official supervision.

While such a procedure makes reliable pasteurization expensive or otherwise impossible, other methods were looked for. Besides pasteurization is an imperfect process, changing the taste and the chemical consistency of the milk.

Two years ago the chemist, Dr. Oscar Lohbeck, succeeded in inventing an apparatus which he calls "*biorizator*." The *biorizator* is a vat containing a chamber which is heated by circulating steam to 75 degrees C., or 167 degrees F., whereinto the milk is driven through an atomizer in a spray under a pressure of three to four pounds.

The milk, coming in the hot chamber in a fine spray, is naturally at once heated up to the temperature of the surroundings.

The temperature of the milk leaving the hot chamber is reduced, the *biorizator* being connected with a cooling apparatus, immediately to 50 degrees F.

The consequence of such a process is the destruction of all pathogenic germs, because every particle of the milk is heated

up to 167 degrees F., a degree high enough to kill disease-spreading organisms; on the other hand, the rapid cooling causes a stay in the development of all other germs which are able to survive such a high degree of heat; for instance, the hay bacillus or some other peptonizing bacteria which are of no importance as far as the health of people enters into question.

A biorization plant consists of a suction pump, compressor and a germ destroying apparatus or biorizator, which is connected with a cooling apparatus in conjunction with a bottle-filling machine. The whole apparatus is easily opened and cleansed after use and before use. The whole apparatus will work automatically, regulated by safety valve and manometer. Whereas, by pasteurization the milk is heated in bulk and some time has to pass until the whole volume is heated up, the molecules of milk, especially albumen, salts, etc., are slowly prepared to undergo chemical changes influencing the digestibility and taste.

Entirely different in biorization! There the fine, thin drops are suddenly raised from 50 degrees F. to 167 degrees F., and before any chemical change can take place the milk has left the hot chamber and is in the cooling apparatus.

The consequence is that by this process the milk preserves the natural taste, appearance and color of raw milk, but loses the odor of the stable and does not contain pathogenic germs. Furthermore, the enzymes—katalose and reductase—are attenuated and biorized milk can be kept longer without spoiling than any other milk.

This process is bound to take the place of pasteurization, or any other process, on account of its simplicity, and saving of time and labor. This process is not alone of importance for mankind, but also for cattle and hogs, on account of feeding the skimmed milk returned from the creameries. No tuberculosis can be transmitted from the mixed milk which has undergone the biorization process, but infection by tubercular bacilli may occur if the milk was pasteurized, and not exposed long enough to the prescribed temperature.

The bacteria, especially the pathogenic, are absolutely destroyed. Experiments showed that, for instance, cholera, typhoid, tubercle, dysenteric, bacillus Gaertneri, bacillus pyocyaneus, bacterium coli, bacillus fluorescens, liquefaciens, chrenotrix, streptotrix were killed by biorization. Hay bacilli and other resistent germs, without any influence on the human or animal system, would survive the process. Special and thorough experiments were made with tubercle bacilli. It was found that animals inoculated with samples of biorized milk were not affected at all, while the controls with samples from the same milk, but in the raw state, treated, soon died of tuberculosis.

The same results were found in his experiments with biorized milk by Dr. Hoffman, director of the hygienic institute of Leipsic University; and also by Dr. Kirchner, Director of the Agricultural Department.

Dr. F. Hering, of Zittau, in his article, *Biorization*, says it is easily understood that a milk chemically unchanged, biologically active and still cheap, which is free of all danger of infection, is of the highest importance in the fight against tuberculosis and mortality of infants.

Lorenzen shows that biorized milk can be kept twice as long as pasteurized milk.

A pasteurization plant is easily changed to a biorization plant by simply installing the biorizator in place of the pasteurizer. There is no doubt that biorization will soon take the place of pasteurization, and Dr. Schlossman states, in the *Archives Therapic*, after making extensive experiments, especially with pathogenic germs, that biorization will revolutionize the milk question for infants and the use of milk.

HAS NEW, WELL EQUIPPED VETERINARY HOSPITAL.—Dr. L. J. Herring, Wilson, North Carolina, has recently moved into a new, thoroughly up-to-date veterinary hospital, with 18 box stalls. It has a fine operating room thoroughly equipped. We congratulate the doctor and wish him every success.

INDOLENT BOVINE PLACENTAE.*

BY W. HARRY LYNCH, D.V.S., PORTLAND, ME.

I am looking forward expectantly to the discussion of this topic, for I doubt there being any practitioner here who has not encountered this condition many and oftentimes. Also the fact that it is difficult to make hard and fast rules to govern its treatment, since each case seems to be largely in a class to itself. It is as often as not a proposition alone, running counter to the superstitions of the laity where we are summoned to care for these clinics; so I hope every man here will give us some of his experiences along these lines.

The growth of the livestock industry in the State of Maine will generally make it practically impossible for any member of our association engaging in general practice to escape experience.

Compared with the uterus of a mare, the cow has some striking differences; for instance, the concave curvatures of the cornua look downward, whereas, in the mare they are in the opposite direction; though in both the broad ligaments are attached to this concavity. Consequently, if the uterus of a cow be considered as freely suspended in the cavity of the abdomen, the extremity of the horn is twisted outwards and upwards, while its base near the body of the organ, although drawn in the same direction by the ligaments, yet retains its position, being firmly maintained in it by the body of the uterus, which also receives the insertion of the broad ligaments on its lower plane.

This insertion causes the uterus to project above them; while in the mare, in which the ligaments are inserted at the upper part of the body, the uterus projects below them. These ligaments are extensive in the cow, and may be compared to a triangular sheet one angle of which is fixed to the floor of the pelvis, the other two to the tuberosities of the ilia, the body of

* Read before the Maine Veterinary Medical Association at Rockland, July, 1914.

the uterus resting on this sheet, also a portion of the cornua which are thin and tapering at their anterior extremity, body short and narrow with interior of the uterus less ample than the mare.

A wider divergence comes now in the caruncles or cotyledonal processes which some of the authors I have consulted inform me are peculiar solely to the bovines—not being in the mare, pig or carnivora. These caruncles are few and small in the uterus, becoming more numerous in the cornua. At birth a female calf has from thirty to forty; and one hundred and twenty have been counted in a cow after parturition. Each is attached to the mucous membrane by a narrow pedicle and in removing the foetal placenta—literally unbuttoning it, we must use care not to complicate our case by tearing them off, thus making a laceration.

Since bovine placentae are normally of longer retention than any of our subjects, I always counsel the man who calls me within twenty or thirty hours to treat this condition to wait a little longer, for I do not wish to risk getting a hemorrhage, which might ensue with premature removal of secundine. None of the authors I have consulted tell me just what happens immediately following parturition, merely that expulsion is followed by contraction of the uterus. But I find in actual practice that the uterus may contract without expelling the membrane; and varying degrees of intimacy between the cotyledons and so whatever causes this must be the cause of the retention of the foetal membranes.

Various sequelae are the outcome of this condition. Long continued presence of the secundine is apt to be followed by leucorrhœa, septicæmia, pyæmia, metritis, and diarrhoea with subsequent debility and danger to health of persons using the milk. Rising temperature and uneasiness are fairly diagnostic of uterine complications. I find a variance as to treatment among the authors I have consulted, some reliance being placed in douches; personally I have not found any drug to be specific, but I remove the cause of the trouble, after a reasonable interval

of a few days, by manual traction. If I find too high a temperature, I give a corrective; if loss of condition, give a tonic; but in my worst cases where there is extreme debility with septicemia either developed or incipient, I find good results follow the use of echinacea. I use fluid extract with, as I have said, fair success.

Some of my clients think these membranes should be speedily removed; others who are more versed in cattle lore, appreciate the fact that within a reasonable period the membranes are likely to disengage without interference, in which opinion they are confirmed by me; as personally I find it impossible to remove them without injuring the caruncles in the majority of the cases, as they are so intimately connected that they will tear sooner than come apart. The third day is early enough for interference usually, but if it could be done sooner it would be better.

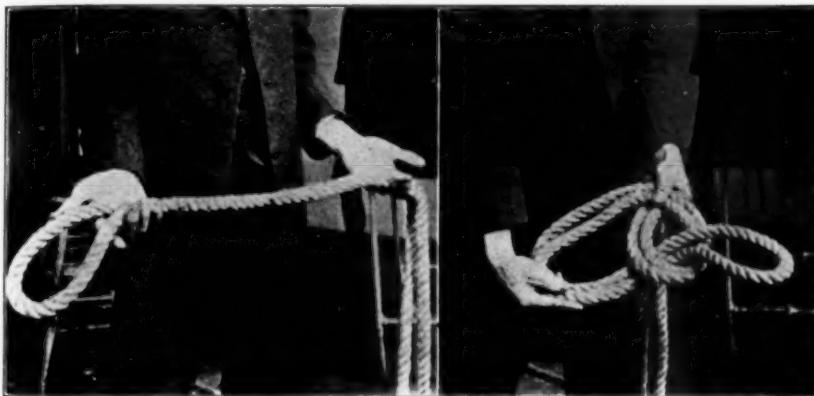
I clean the uterus after removing membranes with an irrigation pump. Give tonics, order blankets put on if there is chill and shivering. Finally, as I previously stated, if septicemia is imminent or developing I use echinacea, with a fair number of cures resultant therefrom.

SECOND SAILING LIST. OFFICIAL TOUR OF A. V. M. A.—
July 10, 1914: Secretary N. S. Mayo, Chicago, Ill.; John F. De Vine, Goshen, N. Y.; H. D. Gill, New York City; E. B. Ackerman, Brooklyn, N. Y.; J. H. Blattenberg, Lima, Ohio; E. F. Sanford, Brooklyn, N. Y.; Ross Huson, Albany, N. Y.; Reginald Morgan, Elgin, Ill.; D. M. Campbell, Elgin, Ill.; Mrs. H. D. Gill, Mrs. D. M. Campbell, Mrs. H. J. Brotheridge, Miss G. E. Brotheridge.

THIRD AND FINAL SAILING LIST TO VETERINARY CONGRESS IN LONDON—July 25th, 1914: Dr. S. Brenton, Detroit, Mich., and Dr. W. J. McKinney, Brooklyn, N. Y. Dr. W. L. Williams, Ithaca, N. Y., with Mrs. Williams, is traveling about in Ireland, and will be in London in time for the Congress.

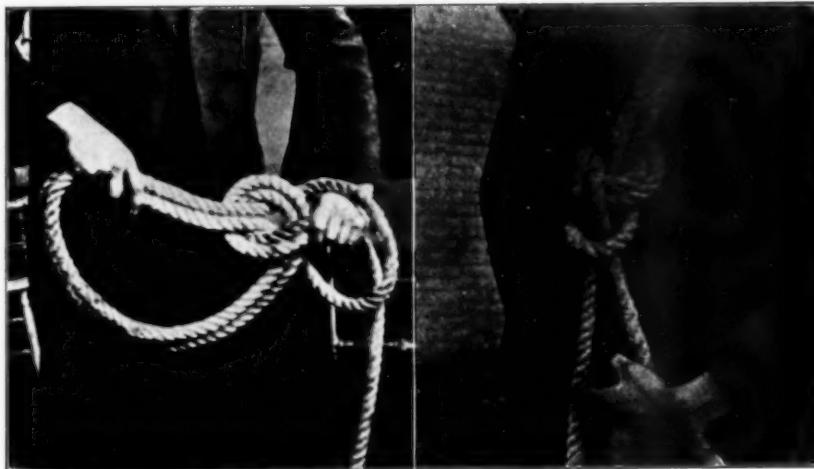
THE BOW LINE ON A BIGHT—THE BOW LINE.

By Prof. H. E. KINGMAN, Chair of Surgery, Fort Collins, Colo.



Bow Line on Bight, 1.

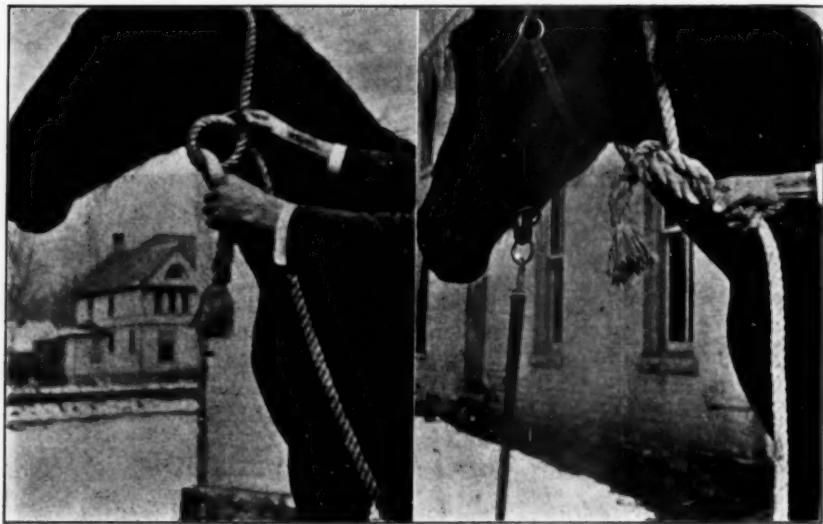
Bow Line on Bight, 2.



Bow Line on Bight, 3.

Bow Line on Bight, 4.

The bow line on a bight is principally used in making a side line of a rope or where a rope is used without a harness for casting an animal. It is easily tied and cannot be pulled into a hard knot.



Bow Line, 1.

Bow Line, 2.

The bow line is known throughout the country, but is worthy of description for the benefit of those not familiar with its usefulness. It may always be easily untied no matter how much tension has been administered.

PAST PRESIDENT BRENTON, OF A. V. M. A., paid us a visit before sailing for London to attend the International Congress on July 25, 1914.

NO OTHER SUCH ASSET FOR THE VETERINARIAN AS ASSOCIATION WORK.—Commenting upon the organization of the Western New York Veterinary Medical Association, at Buffalo, in April, as published in our June issue, pages 369 and 371, Dr. Walter G. Hollingworth truthfully remarks that the local organizations in the states are a great help to the A. V. M. A., and that there is *no other such asset for the veterinarian as association work*. That is true, and there is no work that a veterinarian can do that will bear better fruit to his chosen profession than to see that *his* community has an organization of veterinarians, if he has to bring them in from a 25-mile area to make a quorum. That is why we always find room to report a veterinary association meeting.

REPORTS OF CASES.

INTERESTING POST MORTEMS.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

It having been my privilege to hold post mortems on the three following cases, I report my findings for what they may be worth to members of the veterinary profession:

INTUSSUSCEPTION OF DUODENUM.—Egyptian poodle five and a half months old and weighing $16\frac{3}{4}$ ounces, was presented for treatment, having a very fetid breath and copious movements of feces, liquid in consistency and of a bright yellow color. There was no appetite, and the puppy seemed to be suffering great pain, which was more noticeable at times. The mucous membranes appeared rather anaemic and there was a rise of temperature. Enteritis was diagnosed and a grave prognosis was given. After 48 hours' treatment, during which time the bowel movements became less frequent and less copious, the patient being kept on beef tea and tonics, it died, apparently without pain. Upon post-mortem examination the intestinal tract showed inflammatory changes, and about six inches posterior to the stomach there was an intussusception of the duodenum for a distance of $2\frac{1}{2}$ inches, thus involving 5 inches of the mesenteric blood supply and causing an extensive congestion and inflammation, which had become gangrenous shortly before death, which accounted for the puppy dying without pain.

SOME INTERNAL LESIONS RESULTING FROM A CRUSH.—Dog (young pup), brought to office with history of having been crushed by the front wheel of an automobile just a few blocks distant and instantly rushed to the office. The muscles of the body were relaxed, mouth filled with blood; the blood was swabbed from the mouth and dog completed a few respirations. The heart was at first strong, but gradually grew weaker and weaker, and the mucous membranes became anaemic.

Internal hemorrhage was suspected. Post mortem revealed *no* fractured bones, which was *not* as expected.

The thoracic and abdominal cavities were both filled with blood, and large blood clots were found in each. Found lungs congested, alveolar wall had been ruptured and the air sacks were filled with blood, giving them a distinct red color, with the exception of a very small streak along the dorsal portion of the left lung. The heart did not show any noticeable changes. The posterior vena cava however was split in shreds.

In the abdominal cavity the mesenteric vessels were all engorged, showing splendidly the intestinal circulation. The liver was lacerated, having large areas of the parenchymatous tissue exposed and capsule torn from over it in three places; these crevices extended over half-way through the thickness of the liver.

APPENDICITIS IN A DOG?—Fox terrier puppy, about five months old, was taken suddenly with severe pain resembling acute peritonitis. Anodyne treatment and hot applications were ordered, but despite all efforts to relieve the symptoms the puppy died within 12 hours. On post mortem the following lesions were found:

Evidence of inflammation in the form of petechial hemorrhages over the distal half of the caecum, which was almost entirely shut off by a constriction from the remainder of the bowel, resembling closely in form the human appendix and suggesting forcibly the possible presence of a case of appendicitis in the canine.

NOTE.—Fifteen interesting case reports will be found on pages 586 to 589 this issue.

MADE CHIEF INSPECTOR.—John I. Handley, D.V.M., B.Sc., Charlotte, N. C., has been made Chief Meat and Milk Inspector of that city.

THE COST OF RAISING A DAIRY COW.—Department of Agriculture Bulletin No. 49, under the above caption, states that after a trial on 117 calves from birth to the time they enter the dairy herd, it has been proven that the cost of raising a dairy heifer, one year old, on a Wisconsin farm, is \$39.52; two years old, \$61.41; these estimates also applying to other dairy districts in the North and East, where land and feed values are similar to those in Wisconsin.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

SUNSTROKE IN AMERICAN THOROUGHBRED GELDING [*A. Seton-Milne-Munic., V.S., British Guiana.*].—Nine-year-old gelding after five years racing was broken to harness. Taken very sick, he was found by the writer lying down, blowing hard and with a temperature of 109 degrees F. It was not possible to get him on his feet. Ice was applied on his head and spine and fanning was kept up. A mixture of tinct. digitalis, liq. ammon. acet., spir. aeth. nit. and water was put up and given to him. After half an hour the temperature went down to 108½, to 105 in the evening, 103 the next morning. Strong frictions were also applied on legs and body. Gradually improvement was manifested, the animal could be raised, he was placed in a comfortable loose box and in a few days was all right.

This is the second case of sunstroke seen in the tropics by the author, and the highest temperature he has recorded with a recovery.—(*Vet. Rec.*)

BILATERAL LUXATION OF THE LENS IN A DOG [*G. O. Rushie Grey, M.R.C.V.S., B. Sc.*].—In an article published on that condition where the etiology, pathological changes, symptoms and treatment of the disease are considered, the author relates the following which occurred in a five-year-old fox terrier. The animal was in the habit of fighting cats and pushing its head into rats' holes. After a while he was noticed to walk into objects, as if seeing imperfectly, and later would always keep the eyelids tightly closed. Blepharospasm was great and cocaine had to be instilled to permit examination. The pupil appeared widely dilated, but this was due to an anterior luxation of the lens with the consequent pushing backwards of the iris. The lens was situated in the anterior chamber, normal in appearance and in both eyes had been arrested in the pupillary field. The cornea showed a posterior keratitis. Extraction of the lens

was advised, and will be the subject for another publication.—(*Vet. News.*)

CLINICAL POST PHARYNGEAL SURGERY [R. Jones, *M.R.C.V.S.*].—Interesting records of three cases, two of which showing the impropriety of never operating on the throat, when there is difficulty in breathing, without previously performing tracheotomy.

First Case.—Bullock had actinomycosis of the back of the tongue and throat, which was successfully relieved by iodine treatment. After a few months he is ailing again with a tumor at the back of the pharynx, hanging in front of the larynx. Thrown to be operated, he suffocated and the insertion of a tracheotomy tube only saved his life and permitted the removal of a mushroom-like shaped tumor, with the ecrasuer. Recovery followed without trouble.

Second Case.—Pregnant heifer was making a noise in breathing. As her condition is not alarming, she is left until she had calved. When then, as she had grown worse in her respiration and was refusing food, she was to be cast to be operated of a pharyngeal abscess. As she was thrown, danger of suffocation became such that tracheotomy had to be immediately performed and a tube introduced. The mouth of the animal was then opened wide, and examination revealed an abscess on the superior surface of the pharynx. It was torn open with the finger and a gush of pus escaped. Recovery followed.

Third Case.—Was that of a barren cow, which had a tumor in the jugular groove, a few inches from the larynx between the trachea and the cervical vertebrae. After a few days of expectation the case became more serious and the cow had to be operated or die. By careful dissection the swelling was isolated from the tissues covering it; when exposed it was lanced with a trocar and a large quantity of pus escaped through the canula. Recovery was uneventful.—(*Vet. News.*)

METASTASIC STRANGLES IN AN AGED HORSE, FOLLOWED BY SYMPTOMS SIMULATING PURPURA, ENDING WITH POLL EVIL, TREATED WITH AUTOGENOUS VACCINES AND SERO-VACCINE, RECOVERY [W. M. Scott, *F.R.C.V.S.*, *F.R.M.S.*].—Ten-year-old cart gelding, the seventh on a farm to become affected with strangles. First he had a unilateral submaxillary swelling (hard and painful, which treated, matured and was

lanced. The following day he was protruding his nose, refused his food some and when drinking, water returned through his nostrils. The temperature goes up to 106 degrees F. A swelling is noticed on the left parotid region. Post-pharyngeal abscess is developing. It bursts and relief followed. Then appeared oedema of the nose, lips, chest, abdomen and hind legs, similar to those seen in purpura. But no petechias are present. After a few days these swellings disappeared, and then the horse looks as if convalescent. Suddenly he again protrudes his nose, his head is carried high in a stiff manner. The poll presents a bilateral swelling, gradually enlarging, which took a week to mature. It was lanced, treated and finally the horse recovered.

The treatment consisted medicinally in the application of powder of citric acid, chlor. of potass, and boric acid placed on the tongue three times a day. Injections of a stock vaccine obtained from a case in the same stable composed of 500,000,000 strept. and 750,000,000 staphiloc. An autogenous vaccine was used also of 750,000,000 and of 500,000,000 strept. Free incisions were made in the lancing of the poll evil. Cold water irrigations with plugging the wound with citrate and chloride of sodium were also resorted to.—(*Vet. News.*)

BOTRYOMYCOSIS IN A COB [*G. Mayall, M.R.C.V.S.*].—Nine-year-old cob had a swelling on the point of the shoulder; it is broad, hard and painful. Tincture of iodine is injected into it, and biniodide of mercury ointment rubbed over it. Iodide of potash is also administered three times a day. Two days later the injection of tincture and the blisters are renewed. The tumor fluctuated, was lanced and a quart of pus let out. Iodide internally is continued. The swelling diminished a little, but was still hard at the base. Same injection at the wound of incision made again. Gradually the enlargement goes down. Another blister is applied, nitrate of silver is introduced in the wound and its depth causticked. Finally the growth is almost all gone, the shoulder has resumed its natural form and the cob went to work. The treatment lasted one month.—(*Vet. Journ.*)

FLANK INCISION FOR OPERATION OF CRYPTORCHID [*E. C. Winter, F.R.C.V.S.*].—The author has used this method and is in favor of it when comparing with the inguinal. He operates above the fold of skin in the right flank, sometimes on the left or on the right, according to the position of the testicle. The skin is shaved, cleaned by scrubbing with ethereal soap and anti-

septics and painting with iodine. The incision is made almost in a vertical direction, being readily closed afterwards by sutures. In his experience, the author has met with very little swelling, no interference with urination, no hernia, no adhesion of the bowel or omentum to the operation wound.—(*Ibid.*)

INTERESTING CYSTOTOMY [*W. C. Hazelton, M.R.C.V.S.*].—Case of a Pekinese bitch, four years old, which was relieved of a urinary calculus by suprapubic cystotomy. The stone weighed three-quarters of an ounce and was about as large as a walnut. Recovery was uninterrupted, and the little thing became pregnant shortly after.—(*Vet. Journ.*)

FRENCH REVIEW.

BY PROF. A. LIAUTARD, M.D., V.M.

RECOVERY OF SEVERAL CASES OF FRACTURE [*Major Tatin, Army Vet.*].—The author thinks that too often animals suffering with fracture are too hastily destroyed, as recovery may be obtained without treatment, without apparatus and in trusting to nature alone. Especially is the case for mares, which may at least be used for breeding purposes. Three recoveries are presented to sustain the proposal.

A mare arriving at her regiment has a fall and as consequence a complete fracture of the pelvis, with splinters, situated back of the cotyloid cavity. She is put at liberty in a field. Four months after, she is scarcely lame and the callus almost all absorbed. There remained only a slight dropping of the croup. The mare returned to work.

A horse, while being shod, struggled, stamped his left forefoot on the floor, he is lame—on three legs. All symptoms of fracture of the third phalanx are present. Without any treatment, he is scarcely lame two months after. Dead four months later, the phalanx showed evidences of consolidated fracture.

A third case, brood mare has a fracture of the coronet. She is pregnant. A wadding dressing only is put on. Eight months after, having been at liberty in a box, she has an enormous callus round the coronet, the fracture is consolidated and since has continued her career of brood mare.—(*Rev. Vet. Milit.*)

STRANGULATED DIAPHRAGMATIC HERNIA [*Major Floquet, Army Veter.*].—Followed by the writer, the case presented peculiar manifestations, which are resumed as follows: "The horse kept turning in his box, carefully kneeling down, and then in complete dorsal decubitus with the four legs flexed and the head turned towards the shoulder. He remained in that position until urged to get up. Scarcely he is standing than again he bends down on his knees, flexes his neck and head on the sternum and after a few seconds he drops on the lateral decubitus." Towards the end of the attack "the horse threw himself violently forwards, went through the same action, tried to get up, made a somersault and died. At the autopsy was found an old hernia of the posterior portion of the small intestine, strangulated by the passage through the hernal ring of a piece of the diaphragmatic curvature of the large colon, which was as big as the fist."—(*Rev. Veter. Milit.*)

NECROSIS OF THE NASAL CARTILAGES [*Prof. Cadeac.*].—The wings of the nostrils with their cartilages and those of the inferior portion of the septum nasi are sometimes the seat of necrosis by bites, contused wounds or tearings of these regions.

The necrosed region is the seat of a diffused, indurated swelling, invaded sooner or later the entire internal wing and extends to the median septum. When this is involved, the swelling is bilateral. The necrosis is indicated by one or several openings, fistulous, with granulating edges, with escape of greyish bloody fluid. This local infection is accompanied with hypertrophy and induration of the subglossal lymph glands. It may last as long as the cartilaginous tissue of the diseased wing has not been necrosed. This may demand months, and when it has taken place, the wing of the nostrils drops, the nasal cavity is smaller, respiration is more difficult and roaring ensues.

Necrosis of the cartilaginous septum may follow that of the nostrils and by extension of the infectious process a perforation of this septum may follow.

Free incision of the fistula, stopping of the hemorrhage, simple antiseptic injections, or again slightly caustics, generally bring on recovery after a few weeks. Cauterization with nitrate of silver or chloride of zinc may hasten the cure.—(*Journ. de Zootech.*)

NECROSIS OF THE TURBINATED BONES [*By the Same*].—It succeeds to purulent collection of those cavities. It is then a com-

plication of curves of the molar tents, acute or chronic coryza, or traumatism. Acute or chronic sinusitis often give rise to it. It also occurs frequently in colts. *Symptoms:* Foetid, unilateral, nasal discharge, yellow or whitish, resembling that of acute or chronic sinusitis; more or less severe dyspnea or even roaring; slight subglossal adenopathy. Swelling of the facial bones soon follows: it is hard at first, but gradually becomes softer. Percussion of the region gives a dull sound and is accompanied with great pain. This necrosis is frequently complicated by meningitis or cerebral abscesses with symptoms of immobility, troubles in sight and choreaform actions. The treatment consists in trephining the nasal cavity and the sinuses involved, resecting of the necrosed turbinated and antiseptic irrigations and dressings. The necrosis is liable to return. The degeneration of the mucous membrane is incurable.—(*Ibid.*)

PURULENT INFECTION FROM STRANGLES IN A HORSE [*Major Vignard, Army Veter.*]—A six-year-old gelding is laid up, and successively develops symptoms which permit a diagnosis of pulmonary trouble, with origin from strangles, as the disease is prevailing in its surroundings. After treatment, he rallies from that, but manifests the symptoms of pleurisy. Those are followed after a few days by abundant and fetid diarrhoea, which is relieved with salt, salicylate of soda and muriate of morphia. Then the animal appears stiff on his hind quarters, he staggers and seems in pain when made to turn suddenly. Abscess of the loins is suspected. Gradually the condition is worse, and after losing flesh rapidly he dies after an illness of 22 days. *Post mortem:* Abundant collection of pus is found in opening the abdominal cavity. Lesions of acute peritonitis are noticed all over. The liver, three times its normal size, is stuffed with abscesses, of various sizes and containing thick, yellowish pus. The organ is adherent to the diaphragm by its anterior face. The spleen is normal. The kidneys congested. An abscess as big as an apple is in the sublumbar region, little back of the right kidney. In the thorax, pleura is congested, lungs are healthy. There is an abscess as big as a man's fist near the point of the heart and promotes the adhesion of the pericardium to the parietal pleura. Finally another abscess is found at the entrance of the chest on the internal face of the first left rib. The nervous system was healthy.—(*Rev. Veter.*)

ABSCESS OF MYOCARDIUM FOLLOWS FOOT AND MOUTH DISEASE IN A BULL [*Mr. Barrat*].—The animal died suddenly with-

out having presented sufficient alterations in his health to make such lesion suspected. He took his meal one evening, bellowed once, fell, struggled some and died. At the autopsy the heart only showed lesions. It was pale in color and the ventricles filled with blood clot. The interventricular septum, towards its superior part, had a tumor, as big as a hen's egg, containing white, creamy pus. The walls of the abscess were one centimeter thick. A second collection was enclosed in the wall of the left ventricle towards the inferior position. The endocardium presented no inflammation, nor ulceration. The two abscesses had no communication with the cavities of the ventricle.

The bull had had a very severe attack of foot and mouth disease several months previous and for the author that was the cause of the heart disease.—(*Rev. Vet.*)

ITALIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

PANTOPON IN COLICS [*Prof. A. Vachetta*].—Pantopon Roche is a preparation much used in human medicine, as an hypnotic, sedative, analgesic and toni-cardiac. It contains under the form of soluble muriates all the alkaloids of opium. The case here recorded is, I believe, the first in veterinary medicine, where these properties were fully tested. After work, a racing filly was given a drastic bolus. She drank cold water from a pail shortly after and was then taken with violent colic, manifested by great pains and severe symptoms. Rectal injections, general frictions, pilocarpine and eserine failed to give any relief or bring any defecation. Another larger dose of pilocarpine was about to be given when instead the author prescribed six tablettes of pantopon, dissolved in sterile water, to be injected in the jugular. The effect was almost immediate; one minute after the injection the animal became quiet, the temperature came down to 40, the respiration to 12. The mare began to look for food. She was watched, fed slightly and during the night had several abundant passages. Spasms of the intestines followed the drinking of cold water and not until they were relieved by the pantopon's action, actions of the mastic could not take place.—(*Il Nuovo Ercol.*)

HEPATIC ABSCESS BY FOREIGN BODY [*Doct. Girolamo Bianchi*].—This was noticed at a meat inspection of a calf, in a state of nutrition. On the posterior face of the liver there was under

the capsule of Glisson, a swelling of the connective tissue as big as a turkey's egg. The owner of the calf reported that the animal had been fed all the time, only on milk and had received no other food. On opening the tumor in its middle a large quantity of pus was found, and imbedded in the wall a needle, half of which was surrounded by fibrous connective tissue undergoing cartilaginous degeneration, while the other half was in the hepatic parenchyma where it had given rise to abundant proliferation in the connecting tissue. All the other organs were healthy.—(*Il Nuovo Ercol.*)

TUBERCULOUS PLEURITIS IN A COW [By the Same].—This is peculiar because of its comparative rarity. It was observed in an eight-year-old cow, killed by butcher. She presented the following lesions: normal lungs, except at the apex of the left, where there is a caseous center, the size of a hen's egg and containing a small quantity of pus. That was about the only tuberculous lesion in the lung, but on the pleura there were a very large number of tuberculous deposits, of sizes varying between that of a seed of millet and that of a nut. They were lying against each other, pedunculated, rich in blood vessels, and none were adherent to the contiguous pleura. It was a plain case of granulic (pommeliere), where the lesions were essentially located on the pleura and not in the parenchyma of the lungs. There were also a few on the pericardium. The lymph glands were hypertrophied and tuberculous. All the other organs were healthy.—(*Ibidem.*)

CASES OF MALARIAN URTICARIA IN HORSES [Doct. Riccardo Pili].—This is the record of two cases of urticaria, which occurred in two young colts as they were taken in from a run to pasture. The symptoms were very characteristic, viz., numerous little puffs on all the surface of the body and specially the back, the flank and the lips which were very swollen and painful. The temperature was 38.6 degrees C. Suspecting that the eruption was of the ordinary cause, viz., improper feeding and digestion, a laxative was prescribed. The result was negative. The symptoms became more severe, temperature raised, general depression suggested the idea of a different cause. The urine became of a red color. Malaria was then suspected. Blood was extracted for microscopic examination. The parasites of malaria were readily discovered with Lignieres method. A treatment of quinine was instituted at the dose of 8 grams a day by intravenous injection. The result was complete recovery in a few days.—(*Ibid.*)

CORRESPONDENCE.

TIDINGS FROM FIRST PARTY OF OFFICIAL TOUR.

ON BOARD S.S. FINLAND, June 23, 1914.

Editor AMERICAN VETERINARY REVIEW:

We, the members of the official tour of veterinarians to the Tenth International Veterinary Congress, desire to express our most appreciative thanks to our very dear friends who so kindly came to bid farewell to our party.

It certainly was a pleasure to each of us to see the familiar faces at the pier and especially for those who came from distant



points of the U. S. without having any one of his dear ones to wave the last good-bye at our departure from the beloved shores of our country.

The trip aboard the "Finland" was a continuous round of pleasures. A much-needed rest was indulged in by every one

soon after the last glimpses to the shores as they vanished on the horizon, and we settled down comfortably in our steamer chairs. The active life of the veterinarian, however, could not tolerate very long the life of leisure and comfort, and soon groups of our party were seen busying themselves with the various games played aboard the ship. In this regard "shuffle board" was especially indulged in by our party, in which the skill of many of our members brought out many rounds of applause from the galleries which at all times surrounded the players during their well-contested games. The teams were organized and Brothers Marshall and Blair acted as captains. The honors were about the same, but our friend Day, the star performer of the game, is still being jollied with reference to a game in which his team lost by a scoreless game.

It would be unfair not to mention the popularity which our party enjoyed throughout the ocean voyage, and especially the unattached members were always in great demand by the many pretty and intellectual young ladies aboard. This often caused great concern to the director of the tour, as the presence of ministers and priests on board might have assisted in romantic inspirations to our bachelor vets. Fortunately, or unfortunately, it was only a harmless flirtation with pleasant reminiscences for the participants.

The weather was all that could be desired, and sea sickness was an unknown malady aboard. There was no call for the aloe balls, colic drenches and other heroic remedies which constituted the medicine chest of some of our members and the fish of the ocean were certainly badly treated by our happy family.

We are now all well rested and ready for the strenuous work which is awaiting us on the continent.

With our heartiest greetings to all of our professional brothers in our dear country,

Sincerely yours,

ADOLPH EICHHORN,	W. B. HOLMES,
C. J. MARSHALL AND WIFE,	L. ENOS DAY AND WIFE,
HARRY C. MOORE AND WIFE,	J. M. ARINSBURG,
E. D. SHEPARD,	R. C. JULIEN,
T. B. HARRIES,	W. REID BLAIR AND WIFE,
T. LAMBRECHTS,	THOS. FRASER,
F. B. HADLEY,	CONRAD L. NELSON.

For tidings of second sailing party (received when we were on the presses), see page 604.

REGULATIONS RELATING TO TUBERCULOSIS.

OTTAWA, CANADA, June 25, 1914.

Editor AMERICAN VETERINARY REVIEW, New York:

I am enclosing a copy of our new tuberculosis regulations, which enable us for the first time to deal with tuberculosis amongst dairy cattle in a comprehensive way. I am hoping that many of our cities and towns will take advantage of these regulations to clean up the milk supply and eliminate tuberculosis.

1. The aid of the Department of Agriculture, as aforesaid, will be given to such cities or towns having a population of not less than five thousand persons as shall have secured the necessary provisions under provincial legislative authority for the purpose of agreeing to the present regulations.

2. The Government of Canada will assist any city or town, which shall have signified in writing to the Veterinary Director General its desire to have the aid of the Department of Agriculture in controlling bovine tuberculosis in the cows supplying milk and cream to the said city or town, provided the said city or town shall have stated in its application for the aid of the Department of Agriculture, as aforesaid, that, being thereunto duly empowered by law, it will undertake and provide that:

(a) Dairies in which milk or cream are produced for sale therein shall be licensed.

(b) No license shall be issued unless the dairy conforms to the required standard.

(c) The standard shall require that the stable shall have an ample amount of air space, and at least two square feet of window glass for each cow, and shall be well ventilated, drained and kept clean and sanitary.

(d) After two years from the date of the first test of the cattle of any dairy, the sale within the said town or city, of milk or cream from any herd shall be prohibited unless the said herd shows a clean bill of health from the veterinary inspector.

(e) An inspector or inspectors shall be appointed and paid by the said city or town, whose duty it shall be to see that the undertakings and provisions, as aforesaid, are carried out, and that the cows are kept clean and properly fed and cared for.

3. The Veterinary Director General on receiving notice in writing, from any such municipality of its desire to have the assistance of the Department of Agriculture, as aforesaid, shall forthwith make enquiry, and if satisfied that the foregoing re-

quirements are being carried out shall send veterinary inspectors to inspect the said cows.

4. Veterinary inspectors shall use the tuberculin test and also make a careful physical examination of the cows in order to determine whether they are healthy or not. Dairy bulls shall also be examined and subsequently treated in the same way as cows.

5. Following the examination and test the diseased cows and reactors shall be dealt with as follows:

(a) Cows which in the opinion of the inspector are affected with open tuberculosis and are distributing the germs of the disease through the milk, feces or sputum, shall be sent to an abattoir under inspection and there slaughtered as soon as conveniently can be done. When no such abattoir is within reasonable distance, the cows shall be slaughtered in the presence of the inspector, who shall direct how the carcass shall be disposed of.

(b) Reactors to the test shall be separated from non-reactors as effectively as possible (suspicious animals shall be classed as reactors), and the owner shall be given the choice of disposing of them in one of the following ways:

(1) Immediate slaughter.

(2) Slaughter after they have been prepared for the block, by drying off and feeding.

(3) Retaining them in the herd, and selling no milk or cream until it has been pasteurized.

6. Compensation shall be paid to the owner of the herd for all cows slaughtered under these regulations upon the following basis:

(1) One-half the appraised value of the cow if destroyed as a case of open tuberculosis.

(2) One-third the appraised value of the cow if destroyed as a reactor at the request of the owner.

(3) Valuation shall be made by the inspector, and shall not exceed the maximum valuation for cattle as specified in section 6 of the Act.

7. The salvage from the carcass shall be paid to the owner of the cow in addition to the compensation, provided compensation and salvage together amount to less than the appraised value; if more, the surplus shall be paid to the Receiver General.

8. No compensation shall be paid to the owner unless, in the opinion of the Minister, he assists as far as possible in the eradication of the disease by following the instructions of the inspector as to disinfection, etc.

9. No milk or cream shall be sold from a herd containing reactors unless such milk and cream are properly pasteurized. The inspectors of the municipality shall see that this provision is effectively carried out.

10. Tests and examinations of the herds shall be made whenever deemed necessary by the Veterinary Director General, and after each test and examination the herd shall be dealt with in the manner aforesaid.

11. All cows bought by the owner of a herd while under control shall be submitted to the test and successfully pass it before being placed with the healthy cows.

12. When two successive tests fail to detect any reactors in a herd it shall be deemed healthy, and the veterinary inspector shall, when requested, give a certificate to that effect.

13. The existing regulations respecting tuberculosis, in so far as they may be inconsistent with the present regulations, are hereby repealed.

I am sending this copy to you, as it may possibly be of interest to some of your readers either in whole or in part. These regulations constitute a new departure for us in Canada, and until we have had some experience of their operation we will be unable to foretell the result, but I am hoping they will result in great good.

Very truly yours,

FRED. TORRANCE.

CONTROL OF GLANDERS.

BOSTON, June 19, 1914.

Editors AMERICAN VETERINARY REVIEW, New York:

Glanders never can be controlled by the present method.

All horses in a state must be tested with ophthalmic mallein and those reacting segregated.

Many horses with a few glanders tubercles in the lungs will undoubtedly recover in time without any treatment other than good hygienic conditions.

These same horses will, however, give the disease to others before recovery.

The percentage of glanders is so great in our large cities that a slaughter of those reacting without apparent symptoms would be too great a financial strain on the owner or even the state if full value were paid.

Kill all cases with evident symptoms and set off all reactors in good condition, killing those in poor physical condition, even if they have no evident symptoms other than the reaction to ophthalmic mallein.

Forbid the sale of all reactors unless they show recovery by a retest.

Compel all horses coming into a state for sale to first pass the ophthalmic mallein test.

Personally I have had the greatest success in this system of segregation.

It meets with the hearty co-operation of the owner who at once appreciates the value from a business standpoint.

DANIEL D. LEE.

NEW YORK, July 20, 1914.

Editor of AMERICAN VETERINARY REVIEW, New York:

Dear Sir—On canvassing members of your association in regard to the meeting in New Orleans in December, we find that the majority we have canvassed are expecting you to organize the members for a special train party.

That you may have pleasure on the way as well as in New Orleans, and see some of the world's wonders without extra cost in transportation, I beg leave to suggest that you adopt as your route to New Orleans in December the Shenandoah Valley Route, famous for its scenery, famous for its Caverns of Luray, and of The Grottoes, and Natural Bridge. Besides these three world wonders there is that mecca for tourists, Chattanooga, with its Lookout Mountain and Chickamauga Natural Military Park.

My suggestion is that you leave New York so as to visit Chattanooga on the going journey and Natural Bridge and the caverns on the return trip. This schedule can be easily and pleasantly made by special train, and I am sure no other possible route from the east can offer so much that is attractive to the traveller. Should you select this route an agent of this company will accompany your train and you may look forward to a delightful trip. We will certainly do everything we can to make it such.

Yours very truly,

L. J. ELLIS,
Eastern Passenger Agent.

OBITUARY.

D. W. PATTON, M.D., D.V.M.

Dr. D. W. Patton died May 27, 1914, as the result of an accident, while en route to Omaha, Nebraska, in his automobile; the machine having been struck by a fast train near St. Joseph, Mo. Dr. Patton was born near Brodhead, Wis., April 9, 1869, having just passed his forty-fifth year at the time of his death. When one year old, his parents moved to Iowa, where he was reared and educated in the public schools of Franklin and Carroll counties. At the age of twenty-one he entered the veterinary school of Iowa State College, from which institution he graduated, receiving the degree of Doctor of Veterinary Medicine in 1893. Three years later he entered the B. A. I. service, in which he remained until 1907, when he resigned and went to North Dakota and began the practice of veterinary medicine; in which field he remained until 1914. In the meantime he had received the M. D. degree from the Dearborn Medical College in 1905, and was a licensed practitioner in the State of Illinois. Dr. Patton had decided to re-enter the B. A. I. service, and left North Dakota with that end in view. He had been visiting in the south, and was traveling in his automobile to Omaha when the accident that resulted in his death occurred, cutting him off in the very prime of his life. Dr. Patton is survived by a father and mother, wife, sister and brother, who have the heartfelt sympathy of the whole veterinary profession.

JOHN BUFORD ARCHER, V.S.

Dr. John Buford Archer, son of Captain J. Williamson Archer, and Elizabeth Chambers Archer, was born in Spencer, Owen County, Ind., December 2, 1865, died in Washington, D. C., June 12, 1914, aged 48 years, 6 months, 9 days.

Dr. Archer was graduated from the Spencer High School in May, 1881, and for about three years engaged in farming and stock raising.

During the session 1890-91 he attended the New York College of Veterinary Surgeons, and following this engaged in the real estate business and afterwards the oil business, until the fall of 1900 when he entered the Indiana Veterinary College and graduated from it April 1, 1901.

Since that time he had been engaged in practice at Spencer, Ind. He has been prominent in the councils of the Democratic party of Indiana and at the time of his death was chairman of the Second Congressional District, having been elected to that position last fall.

He was deputy State Veterinarian of Indiana, having been appointed to this position by me in March, 1913.

The cause of death was a stricture of the bowels (a chronic trouble) and acute indigestion, he having been troubled with the latter for some time. He had left this city on June 7th in apparently good health, visiting at my residence and taking dinner with me on that day.

He was taken ill soon after (a few hours) his arrival in Washington, and an operation was performed, but the operation was of no avail.

Dr. Archer was one of the leading veterinarians of Indiana, and as such was held in high esteem by all who knew him, always ready to assist in anything to elevate the profession in this state, and to his efforts are to be credited to a large measure the first veterinary law regulating the practice of veterinary medicine in this state. I was a classmate in the Indiana college with him and knew him, I thought, well, but it was only after over a year's close association with him in this office and meeting him in his home that I could appreciate the character of the man.

The State of Indiana has lost an efficient, careful veterinarian, the State and National veterinary associations one of their best members, and I have lost one of the best friends that I have ever had.

He leaves a widow, three stepchildren, three sisters, two brothers and an aged mother, and to these the profession in Indiana and the Indiana Veterinary Medical Association extend their sympathies in their hour of sorrow.

I am yours respectfully,

A. F. NELSON,
State Veterinarian and Secretary Ind. Vet. Med. Asso.

SOCIETY MEETINGS.

COLORADO VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the above association was held at Fort Collins, May 28 and 29. The majority of the practitioners of the state was in attendance and took part in the discussions and clinic.

The first day was given over to the business meeting and the reading of papers, and the whole of the second day was taken up with the clinic. Much time was spent upon the discussion of a proposed *Tuberculin Test Law*, which would be state-wide in its application. The dairymen of the state have drafted a bill, modeled somewhat after the *Wisconsin Law*, which they had expected to introduce into the next legislature which meets in the fall.

This bill provided that the owner of dairy cattle test his own herd, the records to be submitted to the state veterinarian, who shall make condemnations. Dr. Yard, state veterinarian, reported that after a conference with a number of the leading dairymen, they had seen the weakness in this and that he felt they were in a mood to support a bill which would provide that the testing be done by trained men only. The dairymen feel that since there is little tuberculosis in the state, this is the time to stamp it out, and not wait until we become as badly affected as are some of the eastern states.

A legislative committee of five was appointed to look after this matter at the next meeting of our assembly.

The members of the association took lunch together at the Northern Hotel, after which President A. G. Fisk delivered an address, in which he reviewed the history of the association and pointed out plans for its betterment.

Dr. C. C. Stewart read a paper on the *Intradermal Test for Tuberculosis*, with which he has had very wide experience, having tested somewhere near 1,500 head. He has had opportunity to check the test in some instances with the subcutaneous, and believes it to be as reliable in all cases. His work has been throughout country districts where the *subcutaneous test* would

be a practical impossibility. He felt that he obtained as good results from the ordinary B. A. I. tuberculin as from the alcohol precipitated, which is recommended by the experiment station in California. This paper brought out considerable discussion from the members, a number of whom had had experience with the test. It seems to meet with great favor under our Colorado conditions.

Hog cholera was well taken care of by three different members. Dr. A. A. Herman, after wide experience with the simultaneous vaccination, spoke in favor of that method. Dr. F. Gilgen presented some of his own experiences in treating the disease. Dr. Playne Guyselman gave the results of 18 months' work in the San Luis valley, where hog cholera had practically bankrupted the farmers, and where in the above-mentioned time he with one other veterinarian had been able to completely eradicate it.

This work is of not only local but national interest, because it shows what can be done by the methods used, which were, in this case, the serum alone, absolute quarantine, veterinarians having the authority of deputy sheriffs, thorough cleaning and disinfection were used following each outbreak. No virus has been used in the valley since these men took charge, and they are strongly in favor of the serum-alone method, because they feel that the introduction of the virus merely tends to spread the disease. They are working under the direction of farmers' associations who furnish the money for the work.

These papers will be published in full and the proceedings of the association meeting can be had by writing to the secretary.

In the evening the Veterinary Medical Association of the Colorado Agricultural College entertained the veterinarians at their annual banquet and ball, where every one seemed to enjoy himself to the utmost.

CLINIC.

Case I. Rachitis. *History:* Dogs fed on wheat, owner stated that the corn crop failed so he had to resort to wheat. Dr. Whitehouse suggested that the pups be placed on an alfalfa diet until the green grass should come, believing that the hay ration would be as appropriate as the cereals.

Symptoms: Carpal and tarsal joints greatly enlarged and crooked, knots at the costo-chondral unions, face twisted, locomotion difficult, animal lies most of the time.

Treatment: Animal placed on a meat diet and allowed to

exercise at will. At the end of two months the animal showed considerable improvement.

Case II. Equine; black; ten years; gelding. *Diagnosis:* Immobilite; Dr. McCapes, of Boulder, in charge. *History:* A year ago the animal lost control of the hind legs.

Symptoms: Incoordination; atrophy of hips; interfering, irregular gait most noticeable upon backing.

Prognosis: Unfavorable. *Treatment:* Fowler's solution three drams a day, increasing the dose to one and one-half ounces a day, and then beginning the treatment over, starting with the small doses.

Case III. Equine; two years; gelding. *Diagnosis:* Sternal fistula; Dr. Charles Converse, operator.

History: Colt was hurt during breaking. *Symptoms:* Swelling over the region of the sternum, small wound discharging a little pus.

Treatment: Freely incised, wound explored for pieces of bone, none found, dressed with tincture of iodine and instructions given the owner to continue the iodine treatment.

Case IV. Equine; black; two years; male. *Diagnosis:* Ridging; Dr. McCapes, of Boulder, operator.

Upon examination the testicle was fund in the inguinal canal.

Technique: An incision was made over the inguinal canal about three inches lateral to the scrotum, the testicle was delivered through the incision and emasculated. The left testicle was taken in the usual manner.

Case V. Equine; brown; twelve years; mare. *Diagnosis:* Contracted tendons; Dr. McCarrol, of Fort Collins, operator.

History: Of two years' duration. *Symptoms:* Perforans and perforatus contracted until the front of the foot touched the ground.

Operation: Tenotomy; adhesions were broken until the foot assumed a normal position.

Case VI. Equine; black; one month; female. *Diagnosis:* Metastatic arthritis; Dr. Watts, of Longmont, in charge.

History: Joints had been affected for three weeks.

Symptoms: Stifle joint capsule greatly distended, colt emaciated, unable to rise without assistance.

Treatment: Polyvalent bacterin. *Prognosis:* Very unfavorable.

Case VII. Bovine; black and white; nine years; female. *Diagnosis:* Panaritium; Dr. Gilgen, of Eaton, in charge.

History: Of two months' standing. *Previous Treatment:* Tubbing in hot bichloride solution, frequent application of kaolin cataplasma.

Symptoms: Phlegmon about the coronet, open wound on the outside discharging pus, also a wound between the claws discharging pus; animal lies most of the time.

Treatment: Tracts were dressed with tincture of iodine, an autogenous bacterin was made and administered, case shows constant improvement. A report was given of cases similar to this that responded to bacterins where other lines of treatment had apparently failed.

Case VIII. Equine; grey; mare. *Diagnosis:* Prescapular abscess.

Operator: Dr. Charles Converse, of Castle Rock, Colorado.

Symptoms: Swelling slightly above and anterior to the point of the shoulder.

Treatment: Freely incised, permitting the escape of pus, dressed with tincture of iodine.

Case IX. Equine; black; seven years; female. *Diagnosis:* Quittor; Dr. Paxton, of Ouray, operator.

History: Of one year's standing. *Symptoms:* Fistulous tract over outside right quarter, discharging a little pus, considerable organization causing an enlargement about the quarter and coronet.

Technique: Tract opened and curetted, wound dressed with saturated solution of bichloride.

Case X. Bovine; black and white; nine years; male. *Diagnosis:* Actinomycosis; Dr. Ayres, of Sterling, operator.

History: Of several months' standing. *Symptoms:* Abscess about the size of a man's head in the intermaxillary space.

Treatment: Freely incised permitting the escape of a large quantity of thick, cream-colored, glassy pus; cavity dressed with tincture of iodine.

Case XI. Canine; white; six months; female. *Operation:* Ovariectomy; Dr. A. G. Fisk, Trinidad, operator.

Technique: Field shaved and painted with tincture of iodine; bitch was given 1 tab. H. M. C. Form. B.; incision made on the median line about 1½ inches, wound held open by means of a speculum; horns of uterus grasped with Noyes alligator ear forceps; ovary ablated with scissors; wound closed by a continuous peritoneal and subcutaneous suture.

Case XII. Canine; brown; one year; male. *Diagnosis:* Luxation of the femur; Dr. A. N. Carroll, Pueblo.

History: Hit by a motorcycle. *Symptoms:* Inability to support weight, increased mobility inward, limited abduction, entire limb rotated inward, pain upon pressure over the articulation, and some swelling.

Autopsy: No attempt was made to reduce luxation; the animal was killed and a dissection made of the parts. The articular head of the femur was found in front of the acetabulum, the ligamentum teres being ruptured. Dr. Carroll demonstrated an easy method of reducing such dislocations.

Case XIII. Equine; brown; one year; female. *Diagnosis:* Phlegmon; Dr. Kingman, Fort Collins, operator.

History: Colt injured six months previous by rolling into a gate. It is suspected that the periosteum was involved.

Symptoms: Suppurating induration over the lower third of the left cannon, ulcers the size of a dollar on inside and outside.

Treatment: Ulcers curetted, removing large quantity of connective tissue, bacterin prepared from the pus, the wound and leg dressed with tincture of iodine.

Case XIV. Equine; white; ten years; female. *History:* Seems to be deaf, goes to sleep standing.

Symptoms: Not well marked. Temperature 100.4 degrees F. Pulse and respiration normal. *Diagnosis:* None made.

Case XV. Bovine; Jersey; male. *Diagnosis:* Tuberculosis; Dr. Kingman, Fort Collins, in charge.

History: Bull had been given the subcutaneous test by a layman about a year previous to this test. Six months after the first test the bull reacted to the intradermal. At the time of the clinic showed reaction to both the subcutaneous thermal test and the intradermal.

I. E. NEWSOM, Secretary.

CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION.

The fifth annual meeting of the above association was held at Syracuse, N. Y., on June 25, 1914. Thirty members were present at roll-call and five visiting veterinarians, two of whom were applicants for membership.

The meeting was called to order with Dr. J. A. Pendergast, president of the association, in the chair. After the reading of the minutes of the last meeting and hearing the reports of the

various officers and committees, the applications for membership of Dr. W. M. Sullivan and Dr. Daniel O'Laughlin were taken up and favorably acted upon.

The report of the association's attorney, M. A. Switzer, Esq., of Fulton, N. Y., was then heard. It was shown that the association has now one action pending for illegal practice of the profession and several others to be instituted in the near future and as soon as conditions will warrant. The attorney was directed in behalf of the society to continue the work of prosecution of illegal practitioners.

Certain amendments to the by-laws were then taken up and favorably acted upon. These amendments, reading as shown below, authorize the accumulation of a fund for the protection of members of the association against actions for malpractice, and thus, it is believed, place this association in advance of any of the similar bodies of this or any other state of the Union. The amendments follow:

Amendment to Art. V. by adding thereto the following:

§ 5. Immediately following each annual meeting the treasurer shall pay over from the general funds of this association and deposit at interest in a duly incorporated savings bank to the credit of a special fund to be known as "The Central New York Veterinary Medical Association Special Fund" a sum equal to \$1 for each active member remaining upon the rolls at the close of such meeting and such fund shall be used only, with the approval of the Board of Censors, for the expenses of the defense of actions against members for malpractice. If at any time such fund shall amount to the sum of \$250, the interest therefrom shall be paid into the general fund of the association on July 1 of each year, and no further deposits shall be made to the credit of such special fund until it shall have been reduced to an amount less than \$250.

Amendment to Art. VI. by adding thereto the following:

§ 4. Where an action for malpractice shall be brought against a member in good standing he may, upon releasing the control of his defense thereto to this association, apply, in writing and according to a form to be prescribed by the Board of Censors, to the secretary for protection. The secretary shall immediately call a meeting of the Board of Censors to be held within five days thereafter to investigate the fact and circumstances of the case, and if it is decided by them that such member has acted in good faith and has fulfilled his duty in relation

thereto as becomes a member of the veterinary profession, they shall direct the attorney of the association to proceed with the defense of such action. In the event that the association has at the time no regular attorney, the Board of Censors shall retain an attorney to be selected by them for the defense of such action. The expenses incurred in such defense shall be met from the special fund provided for in Art. V., sect. 5. If such fund is insufficient, the balance shall be paid from the general funds of the association.

For the purpose of insuring sufficient funds for the establishment of this work and for the proper continuation of the fight against illegal practitioners, the dues of the association were increased to five dollars per annum.

The following were elected directors for the ensuing year: Dr. W. B. Switzer, Dr. W. G. Hollingworth, Dr. J. M. Currie, Dr. R. M. Weightman, Dr. Frank Morrow, Dr. E. E. Dooling, Dr. J. G. Hill, Dr. Almond H. Ide, Dr. W. L. Clark. The directors elected the following officers: President, Dr. R. M. Weightman, Waterville, N. Y.; vice-president, Dr. E. E. Dooling, Syracuse, N. Y.; secretary-treasurer, Dr. W. B. Switzer, Oswego, N. Y.

An invitation was received from the president of the Genesee Valley Veterinary Medical Association to attend the meeting of that body at Rochester, N. Y.

The president's address was delivered by Dr. James A. Pendergast, president of the association, of Syracuse, N. Y. He reported the society to be in a very active and flourishing condition. Case reports were given by Dr. J. V. Townsend, Dr. R. M. Weightman, Dr. John K. Boschart, Dr. C. R. Guile and Dr. W. F. Burleigh. Dr. H. J. Milks, secretary of the New York State Veterinary Medical Society and a member of the faculty of the New York State Veterinary College, gave a most interesting address on skin diseases of the dog. Full discussion was had on each topic brought out in the reports and paper, whereby the members obtained much valuable information as to diagnosis, prognosis and treatment.

Preceding the business session, a clinic was held at the Infirmary of Dr. H. A. Turner in South Salina street. Median neurotomy was performed upon a bay horse for the relief of foot lameness by Dr. H. A. Turner, assisted by President Pendergast. A brown draft stallion, three years old, having a large umbilical hernia, for which an operation had been performed at

some previous time surgically, was operated upon by the ligation method by Dr. Frank Morow, of Utica, N. Y., assisted by Dr. J. M. Currie, of Rome. One of the most interesting of the operations was that performed by Dr. J. K. Bosshart, of Camden, N. Y., assisted by Dr. Currie, on a Jersey cow, age long forgotten, for the relief of supposed intestinal intussusception. A bay draft horse having a tumor of the shoulder caused by collar was operated on by Dr. W. B. Switzer, of Oswego, N. Y., assisted by Dr. W. L. Baker, of Seneca Falls, N. Y. Myotomy was performed upon a bay trotting mare for the prevention of switching by Dr. Frank Morrow, of Utica, assisted by Dr. Fitch, of Manlius.

Lunch was served at the Infirmary during the clinic and at the close of the meeting a banquet was served at the Hotel St. Cloud.

W. B. SWITZER, Secretary.

SCHUYLKILL VALLEY VETERINARY MEDICAL ASSOCIATION.

The twenty-first annual session of the above association was called to order on June 17, 1914, by the president, Dr. M. D. De Turk, at Reading, Pa.

The following members responded to roll-call: Drs. Fetherolf, De Turk (M. D.), Noack, Bieber, Dunkelberger, Berger, Huyett, Potteiger, C. R.; Kauffman, Reifsnyder, Fernsler, Long-acre, W. S., and Kohler. Visitors were Drs. F. F. Massey and R. M. Staley, the former a physician from Wernersville and the latter an employee in the office of the Pennsylvania State Livestock Sanitary Board.

The minutes of the previous meeting were read and approved, after which a recess of fifteen minutes was declared for the payment of dues.

Among the communications read was one from the National Association Bureau of Animal Industry employees soliciting the united support of this association in securing the passage of these bills.

The secretary was instructed to draft resolutions, forward one to their representative secretary and also have a copy of same spread upon the minutes. The treasurer's report was received.

Under the Legislative Committee, Dr. Noack reported that a milk and meat ordinance had passed council at Allentown, but it

seems that the veterinarians of that locality were not equal to the opportunity, and hence a chemist and an assistant chemist were appointed, which is highly regretted, because they are incompetent to cope with all milk and meat problems.

Delegates to Pennsylvania Veterinary Medical Association.—Dr. Bieber reported that the attendance was somewhat blasted by a snow storm the previous day, which had incapacitated train service, although an interesting program was well discussed.

Election of Officers.—A motion was made by Bieber, seconded by Fetherolf that all the present officers be re-elected by acclamation. Carried; and the officers were declared re-elected.

A motion was made and seconded to adjourn for lunch.

Reconvened at 1.45 p. m., when the various papers were called for.

"The Advantage of a Sanitary Milk House on the Farm" was an exceptionally well-prepared essay, by Dr. C. R. Potteiger. Discussions were participated in by Drs. Fetherolf, Huyett, Staley, Noack and Kohler.

"Disinfection and Sanitation," by Dr. D. R. Kohler. This paper curtailed all general antiseptics used in a practice. Dr. Staley opened the discussion by announcing that one of the safest methods of disinfection for hog cholera is the free use of a solution of sodium carbonas and hot water, followed by spraying with a lysol solution; again that one of the best methods to render a nail wound aseptic was to drop a few crystals of iodine and pour on some turpentine, after wound is well cut open, which penetrates to depth of wound. Tincture of iodine is also very effectual, although the veterinarian should always recommend and suggest to the owner the value of a preventive dose of anti-tetanic serum as a precaution to preventing tetanus.

It was the consensus of opinion among the members that a bichloride solution is not generally recommended for the use of disinfecting dairy stables, because bovines are susceptible to the influence of the drug.

"The Relation of the Veterinarian to the Medical Profession" by Dr. F. F. Massey, a noted physician of Wernersville, was the title of an able address.

He concluded that the veterinarian's and the physician's work was a comparison in a way, and that he trusts the feeling of both toward one another may always be amiable and that we, as professional brothers, should mingle more at such organizations, exchange ideas, so that we may be more able to cope better with the varied ailments afflicting men and animals.

"*Biorization of Milk.*" by Dr. O. G. Noack, was a subject which elicited much discussion.

This method of sterilizing milk, originating from Germany, is claimed to be far superior than the present method of pasteurizing; the process is quicker, better and more efficiently used.

Adjourned.

W. G. HUYETT, Sec.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the above association was held at Boston, February 25, 1914. Sixty-eight members and guests were present. As honored guests there were present Dr. E. C. Schroeder, Superintendent of the Experimental Station of the Bureau of Animal Industry, Washington, D. C., and Dr. W. Horace Hoskins, professor of veterinary jurisprudence at the veterinary department of the University of Pennsylvania.

In the absence of President Perry, First Vice-President Beale occupied the chair and, after calling the meeting to order, announced that as we had some able speakers present, reading of the previous meeting's records would be deferred until later. Dr. Winchester then introduced Dr. Schroeder as the first speaker, who presented a most excellent paper on the subject of bovine tuberculosis, a transcript of which has been inserted in the present issue of the AMERICAN VETERINARY REVIEW for the benefit of members not present. In the conclusion, Dr. Schroeder was given a rising vote of thanks to which he fittingly responded. The president then introduced Dr. Hoskins as the next speaker, who took for his subject the Veterinary Army House Bill No. 4541, on which he spoke at some length, and strongly advised each member to appeal to his respective congressman for support to increase the efficiency of the army veterinary service; and as a result the president appointed Drs. Howard, Burr and Winchester as a committee to formulate and instruct the secretary to send forthwith to the chairman of the house committee on military affairs at Washington, the following:

"To Hon. JAMES HAY,

"Chairman, House Committee Military Affairs,
"Washington, D. C.:

"Dear Sir—The Massachusetts Veterinary Association in meeting assembled strongly urges the passage of House Bill No.

4541. The needs of greater efficiency in the Army Veterinary Service can only be obtained by the passage of this bill.

“(Signed) L. H. HOWARD,
J. F. WINCHESTER,
ALEXANDER BURR.”

Dr. Hoskins also formulated and advised that in order to obviate delay, each member of the congress and senate be sent individual communications by the secretary, as follows:

“Dear Sir—The Massachusetts Veterinary Association, at their meeting in Boston, February 25, strongly approved of House Bill No. 4541, to increase the efficiency of the Army Veterinary Service.

“The fact that every other country of the civilized world has found this recognition requisite to the best and most efficient service, should appeal to you that our country should no longer be denied a service that under proper direction would be more mobile, more efficient by knitting together the various veterinary units of the present service, by the granting of rank and commission, the highest reward that governmental army service affords.

“Yours very truly,

“(Signed) W. T. PUGH, Secretary.”

By request of the president, the secretary read the previous meeting's records, which were accepted as read. Dr. Howard then spoke of Dr. Osgood's unexpected death; also as being a man of personal worth, saying that thirty years ago to-night, Dr. Osgood presided at a meeting of this association, and on motion by Dr. Simpson, seconded by Dr. Howard, it was voted that the president appoint a committee of three to frame engrossed resolutions on his death.

Committee: Drs. Babson, Howard and Peters.

Adjournment at 7.40 p. m.

(Signed) W. T. PUGH, Secretary.

WASHINGTON STATE VETERINARY MEDICAL ASSOCIATION.

The sixth annual meeting of the above association was held in the rooms of the City Veterinary Hospital, Walla Walla, Wash., June 18 and 19, 1914.

It was not as well attended as some had hoped, though attendance was good and sessions highly interesting.

The veterinary situation in the city of Walla Walla is unique in that all the veterinarians of the city have their offices in one place. There are three of them, and the ample accommodations, splendid equipment and excellent team work were certainly gratifying to see.

The meeting place was in a large, well-lighted, well-furnished room beautifully decorated with flowers and pictures.

The designer of the hospital must certainly have had such occasions in mind when he planned the institution.

Dr. Nelson read a paper on *The Encouragement of the Live Stock Industry by the Veterinarians*. Several phases of his subject were discussed by men from all over the State. It was interesting to note that many had a preference for encouraging the dairy industry.

Dr. Seely read a paper on *Infectious Abortion*. To say that the paper was prepared in the doctor's usual splendid style be-speaks much for it.

Dr. Graves read a paper containing a preliminary draft of a proposed state livestock sanitary law, after which he called for suggestions from those present. The interest in this paper was very keen, many good suggestions being advanced, and no doubt that out of it will come a very excellent law.

Many other interesting subjects came up for discussion, but cannot all be covered in a report of this kind.

Outside of routine matters should be mentioned a trip to the State penitentiary. Here we were courteously met and conducted through the institution by a corps of guards, after which we were personally conducted over the farm by the warden who is an enthusiastic hog man. He has extensive hog yards and houses built after his own designing and the splendid animals he is producing indicate their efficiency.

The annual banquet at the Dacres Hotel was one long to be remembered.

The local men, Woods, Trippeer and Baddeley, certainly out-did themselves there.

The clinic was the crowning feature of the occasion. With fifteen listed subjects, besides cases brought to the hospital incidentally during the convention, it will easily be seen why some of the routine business and papers were nearly crowded out.

It was preeminently a practitioners' meeting and, of course, clinics were highly interesting.

At ten o'clock on the third day, when the secretary was obliged to leave, the clinic was still in progress, with ten or twelve devoted ones still busy.

The next meeting is to be held in North Yakima in June, 1915.

The officers for the coming year are: President, J. T. Seely, Seattle; Vice-President, R. Prior, North Yakima; Secretary-Treasurer, Carl Cozier, Bellingham.

CARL COZIER, Secretary-Treasurer.

MAINE VETERINARY MEDICAL ASSOCIATION.

The July meeting of the M. V. M. A. was held at Rockland on the 8th. Meeting called to order by the Vice-President Dr. C. W. Purcell at 8 p. m., as the President, Dr. H. B. F. Jervis, was called to England by the death of his father.

After roll call the minutes of the April meeting were read and accepted.

Visitors present: Dr. G. W. Makie, of Parke Davis & Co.; Dr. P. R. Baird, of Waterville; and Mr. E. S. Cooper, of the Abbott Alkaloidal Co.

Communications: A communication was received from the veterinarians employed by the Bureau of Animal Industry asking the association to indorse a bill that they have before the House of Representatives and the Senate. The association voted that the president should appoint a committee of three to draw up a set of resolutions endorsing this bill. Dr. Purcell appointed Drs. W. H. Robinson, W. L. West and A. Joly on this committee.

The secretary's report from April, 1913, to April, 1914, was read and turned over to the auditing committee, which reported later that they found the report correct and it was accepted.

Papers: Dr. W. H. Lynch read a paper on *Indolent Bovine Placentae*. This paper was very interesting and brought forth much discussion. Drs. C. F. Davis, C. W. Purcell, C. L. Blakely, F. W. Huntington, W. L. West leading the discussion while Dr. Lynch ably defended his paper.

Dr. C. F. Davis read a paper on *Pyo Septicemia of Sucklings*. This paper was discussed by Drs. W. L. West, C. L. Blakely, W. H. Lynch, I. L. Salley and others present joined in the discussion.

The applications of Dr. Haven T. Paul, of Portsmouth, N. H., and Dr. P. R. Baird, of Waterville, Me., were read and

referred to the executive committee. The report on these two applicants to be presented at next meeting.

Next meeting to be held at the DeWitt Hotel, Lewiston, Oct. 14, 1914. Meeting adjourned at 10 p. m.

A shore dinner was served at Oakland Park at 6 p. m. Dr. H. L. Stevens had charge of the arrangements for this delightful repast. Those seated at the tables were Dr. F. W. Huntington, Dr. C. W. Purcell, Dr. C. F. Dwinal, Dr. W. H. Robinson, Dr. H. B. Westcott, Dr. C. F. French, Dr. W. H. Lynch, E. E. Russell, I. L. Salley, Dr. A. Joly, Dr. C. F. Davis and wife, Dr. G. W. Makie, Dr. A. W. Peabody, Dr. H. L. Stevens, Mr. E. S. Cooper, Dr. M. E. Maddocks and Mr. G. H. Davis and wife. After the dinner the party trolleyed back to Rockland, where they arrived shortly before 8 o'clock.

After the meeting an informal smoker meeting was held and Dr. G. W. Makie and Mr. E. S. Cooper gave very interesting talks. A vote of thanks was extended Dr. H. L. Stevens for his services rendered on the entertainment committee in furnishing such a good time.

H. B. WESCOTT, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular monthly meeting of this association was held in the lecture room of the New York-American Veterinary College, on Wednesday evening, June 3, 1914.

The president and vice-president being absent, Dr. R. W. Ellis was asked to take the chair, and presided.

The minutes of the May meeting were read and approved.

Dr. E. B. Ackerman reported for the Committee on Public Watering Troughs, and said that the hearing on this subject had been postponed by the Board of Aldermen for about ten days. Numerous conferences have been held on this subject, and it is expected that everything will be settled in a satisfactory manner. Dr. Ackerman also spoke in favor of the Army Bill, and offered a resolution endorsing the bill, and instructing the secretary to write our state senators urging their support.

Dr. Griessman reported for the prosecuting committee.

Messrs. Whalen and Ellis, of the Norfolk and Western Railway, then gave an illustrated lecture on the Luray Caverns, Natural Bridge of Virginia, and other points of interest in the South.

This was enjoyed by the members and visitors present, and a unanimous vote of thanks was extended to Messrs. Whalen and Ellis. An odd pathological specimen sent in by Dr. Wm. H. Gribble, of Washington Court House, Ohio, was then exhibited for examination. This was supposed to be the testicle of a dog, but, on examination, Dr. W. Reid Blair reported that fibrous tissue had replaced all the testicular tissue.

Dr. Ellis reported the recent death of Dr. Chas. Jamieson, chairman of the prosecuting committee, and appointed as a committee to draft suitable resolutions Drs. Cochran, Berns and Ackerman.

Mr. Morse, who was present, stated that he was a licensed and bonded detective and asked the privilege of the floor. On motion, duly seconded and carried, his request was granted.

Dr. Chase, president of the Alumni Association, announced that the annual meeting would be held in the college building June 10, 1914, at 11 a. m., and the banquet the same evening at the New York Athletic Club.

Dr. Ellis appointed as delegates to the International Veterinary Congress at London Drs. W. Reid Blair and E. B. Ackerman.

Also appointed Drs. Geo. H. Berns, D. W. Cochran and Maffitt Smith as delegates to the annual meeting of the New York State Veterinary Medical Society at Rochester.

Dr. Ellis announced that a number of the delegates to the International Congress would sail on the steamer "Finland," Saturday, June 13, and asked as many as could do so to go to the pier and wish them *bon voyage*.

No further business appearing, the meeting adjourned to meet the first Wednesday in October.

ROBT. S. MACKELLAR, Secretary.

DR. MEADOR BECOMES ASSOCIATED IN THE CATTLE BUSINESS.—Dr. D. J. Meador, assistant state veterinarian of Alabama, has left Selma to become associated with his father and brother in the cattle business at Myrtlewood, that state. We congratulate his father and brother, as we consider it quite an acquisition to a live-stock business to have a veterinarian so closely interested in it. In a recent letter from the doctor, he says in conclusion: "I will still continue in practice, and would not want to miss the REVIEW."

NEWS AND ITEMS.

DR. CHENEY GOES TO TWIN FALLS.—Dr. A. H. Cheney, Miles City, Montana, has gone to Twin Falls, Idaho. We wish the doctor success in his new field.

DR. JERVIS RETURNS.—We had the pleasure of a short visit with Dr. H. B. F. Jervis, of Houlton, Maine, on his return from England on July 17, where he had been called through the death of his father.

PRE-EMINENTLY A PRACTITIONERS' MEETING is Secretary Carl Cozier's opinion of the recent Washington State meeting at Walla Walla. Read his interesting report of it on page 595 of the present issue.

DR. W. H. SKERRITT HAS GONE TO MICHIGAN.—Dr. W. H. Skerritt, son of Dr. H. W. Skerritt, Utica, N. Y., has gone to Mt. Clemens, Michigan, and become associated in practice with Dr. Ewald of that place.

A MOST INTERESTING REPORT of the May meeting of the Colorado Veterinary Medical Association, by Secretary Newsom, appears on page 585 of this issue. The doctor's report of the clinic includes fifteen case reports.

CAN'T DO BUSINESS WITHOUT THE REVIEW.—Dr. W. D. Bennett, Batavia, N. Y., writes: "Enclosed please find check for renewal to the REVIEW. I can't do business without the AMERICAN VETERINARY REVIEW. Accept my hearty thanks."

MADE STATE VETERINARIAN FOR THE SIXTEENTH TIME.—On June 30 Dr. J. S. Pollard, of Providence, R. I., was re-elected state veterinarian for the sixteenth consecutive time. Dr. Pollard is a graduate of the Ontario Vet. College, class of '98.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION will hold its summer meeting on August 4th in Waterbury. Clinics, medical and surgical, will be held at Dr. A. T. Gilyard's hospital. Secretary Dow is determined to put the Connecticut meetings in Class A.

PRESIDENT OF MAINE VETERINARY MEDICAL ASSOCIATION SUFFERS BEREAVEMENT.—Dr. H. B. F. Jervis, Houlton, Maine, was called to England early in July through the death of his father, whose home was in Great Britain. He has the sympathy of his professional brothers.

THE BEST JOURNAL THERE IS—HELPS HIM BEAR HIS INJURIES MORE CHEERFULLY.—Dr. S. S. Wertz, Kensaw, Nebraska, writes: "Enclosed find check for the best veterinary journal there is. Would have remitted sooner but have been in a hospital all winter. Got my right collarbone fractured and it punctured my lung. Also had four ribs fractured on my right side. Hope to be able to work from now on, with the aid of the REVIEW."

ADMINISTRATIVE CONTROL OF GLANDERS is the title of a bulletin by Dr. E. B. Ackerman, Chief Veterinarian of the Department of Health of the City of New York, published by the department. This bulletin of 13 pages, covering the administrative methods of control, is dated April, 1914, just three months after Chief Ackerman assumed the direction of the veterinary work in the Bureau of Infectious Diseases. The doctor's activity is deserving of commendation.

DRS. SKERRITT AND MORROW is the firm name under which Dr. H. W. Skerritt, of Utica, N. Y., and Dr. F. Morrow, formerly of Oneida, that State, have formed a partnership, with headquarters at 317 Columbia street, Utica. These men were classmates and roommates while taking their veterinary courses twenty-five years ago; since which time they have both practised their professions constantly, Dr. Skerritt at Utica and Dr. Morrow at Oneida. We wish them success in their co-partnership.

IMPROVEMENT SHOWN FROM YEAR TO YEAR.—Dr. W. G. Clark, Resident Secretary for Wisconsin, A. V. M. A., Marinette, Wisconsin, in renewing subscription, writes: "Enclosed please find check for \$3, renewing my subscription for the ensuing year. I wish to congratulate you on the periodical that you have published during the past year and the improvement that is shown from year to year. I feel that I am in a measure qualified to judge as I have a complete bound file from volume 16."

ECONOMY WILL KEEP THE WORK HORSE WITH US.—The work horse does not need sentiment to maintain his position; his valuable service in the world's activities is more appreciated to-day than ever before. This is the age of economy, and level-headed business men who have had years of experience with horses in their business are realizing that no more economical motor than the horse can be found. Economy is stamped right on him and shows out strongly by comparison with the complicated, expensive, mechanical devices that man has attempted to substitute for him. The horse increases 30 per cent. in value during the time it usually takes to wear a motor truck out.

PATENT MEDICINE TAX IN JAPAN.—According to investigations made by the Sanitary Bureau of the Home Department the total revenue from the patent-medicine tax (paid by dealers on the amount of sales) for 1912 amounted to \$116,900 gold, a decrease of \$5,000 from the preceding year. The revenue derived in 1912 from the sale of stamps on patent medicines amounted to \$1,119,600, an increase of \$57,400 as compared with the preceding year. As the value of the stamp represents 10 per cent. of the market price of the medicines, the total value of patent medicines consumed in 1912 was \$11,196,800, equal to \$0.216 per capita of population of Japan, showing an increase of \$0.085 on the figures for the preceding year.—(*American Association of Pharmaceutical Chemists.*)

PERPETUATING THE HORSE INTEREST ON A SOLID FOUNDATION.—History has demonstrated that the sure way of perpetuating patriotism is by teaching it to the children. It is therefore gratifying to see the "youngsters"—boys and girls—taking such an active part in the horse shows—more especially the outdoor country horse shows—where they ride many of the mounts and also do some driving. Of course these children are the offspring of parents whose interest in the development of the horse is keen; but it is through their encouragement that the children acquire and cultivate that interest which is just as sure to redound to the perpetuity of the development of the horse as that the teaching of patriotism to the children has maintained and increased that noble qualification in them down through many generations. We cannot commend too highly this practice of having the boys and girls take active parts in the horse shows, and are gratified to see this feature becoming more and more general.

VETERINARIAN GOES INTO POLITICS—A MANY-SIDED MAN.—Dr. Thos. E. Robinson, of Westerly, R. I., has entered the political field, having been elected councilman for the town of Westerly, defeating his opponent by a very large majority. The genial doctor has been located in Westerly for a number of years and enjoys a very lucrative practice, being the only veterinarian in town. As Westerly is the dividing line between Connecticut and Rhode Island, Dr. Robinson has the distinction of acting as assistant in his county to State Veterinarian J. S. Pallard of R. I., in the work of testing horses for glanders. He also assists the Connecticut Commissioner on Domestic Animals in the same line of work for animals entering Connecticut. For a number of years the doctor has acted as veterinary judge to the Newport and Narragansett Pier horse shows, is at present veterinarian to the Point Judith Country Club, and is treasurer of the R. I. Vet. Med. Assn. and holds the same office for the R. I. Board of Vet. Examiners, was formerly resident secretary for the A. V. M. A.

PROPOSED GEORGIA COCAINE LAW.—H. B. 885, by Messrs. Swift, Wohlwender and Slade, incorporates a proposed Cocaine Law identical with the present New York Cocaine Law. It provides, among other provisions:

1. Sales at retail are restricted upon the written prescriptions of *physicians only*.
2. The retail druggist must give to the purchaser a certificate indicating:
 - a. The name and address of the seller.
 - b. The name and address of the prescribing physician.
 - c. The date of the sale.
 - d. The amount sold.
3. It is expressly provided that physicians may dispense, after a personal examination of the patient, provided the certificate required of the retail druggist (see 2, above) is given to the patient. A violation of this provision is a felony.
4. Physicians, dentists, veterinarians and retail druggists may buy direct from the manufacturer or wholesaler at wholesale upon a written order, provided such sales are duly recorded and proper labels used.
5. Physicians, dentists, veterinarians and retail druggists may not have on hand more than $1\frac{1}{8}$ ounces.
6. Physicians, dentists and veterinarians must record, at least once in six months, the gross amount dispensed.

TIDINGS FROM THE SECOND PARTY OF OFFICIAL TOUR.

(From the REVIEW's Staff Correspondent on Board the St. Paul.)

On Board SS. St. Paul, July 17, 1914.

Editor AMERICAN VETERINARY REVIEW:

This is our last day out. We expect to arrive at Cherbourg to-night. Eight days ago we left New York, some gay and smiling, some otherwise, but all anticipating an experience at sea and sights of the old countries. We had scarcely taken our last look at the city of high buildings when our experiences began. (Also saw sights in dark corners.) Our first experience was a fog so dense that our pilot boat was lost and another had to be sent out to return our harbor pilot. This information, with the continued systematic sounding of the steamer's whistle, deterred many from going below; but troubles other than nautical were ever arising. A party of southern girls were so fascinating that many of the younger members of our party threatened desertion to follow the trail of soft voices, let it lead where it would. No sooner had we our party corralled than John Blattenburg became a problem. Not content with three trunkfuls of hot and cold toggery that would have been the envy of any ladies' man, he had added to his wardrobe a complete feminine attire, and when from sheer exhaustion he had to abandon *making love*, he donned his shimmery garments and coquettishly received the embraces of the stronger sex. Our troubles, however, were greatly lightened by the behavior of the weather and the sea. We soon got our sea legs and passed as old sailors.

We hope to join the party that preceded us at Utrecht, and the one that sails later at London.

Yours truly,

J. F. DEVINE.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n.	Mar. 5-6-7, 1914	Auburn.	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.	June 10, 1914.	141 W. 54th St.	P. K. Nichols, Port Richmond, N. Y.
American V. M. Ass'n.	Dec. 28-31, 1914	New Orleans, La.	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n.	January 5-6, 1915	Little Rock.	R. M. Gow, Fayetteville.
Ass'n Métécale Veterinary Française "Laval".	1st and 3d Thur. of each month.	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.	2d Fri. each month.	Chicago.	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha.	3d Mon. each month.	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n.	Monthly.	St. Joseph.	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n.	December 10, 1913.	San Francisco.	John F. McKenna, Fresno.
Central Canada V. Ass'n.	Feb. and July.	Ottawa.	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n.	June and Nov.	Syracuse.	W. B. Switzer, Oswego.
Chicago Veterinary Society.	2d Tues. each month.	Chicago.	D. M. Campbell, Chicago.
Colorado State V. M. Ass'n.	January, 1914.	Denver.	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n.	Aug. 4, 1914.	Waterbury.	B. K. Dow, Willimantic.
Delaware State Vet. Society.	Jan. Apl., July, Oct.	Wilmington.	A. S. Houchin, Newark, Del.
Esco (N. J.) V. M. A.	3d Mon. each month.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.	2d week, July, 1913.	Rochester.	J. H. Taylor, Henrietta.
Georgia State V. M. A.	Dec. 22-23, 1913.	Atlanta.	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.	July 17, 1914.	E. St. Louis.	Louis P. Cook, Cincinnati.
Illinoi Vet. Med. Ass'n.	July 15, 1914.	Springfield.	L. B. Michael, Collinsville, Ill.
Illinois State V. M. Ass'n.	Jan. 14, 1914.	Indianapolis.	L. A. Merillat, Chicago.
Indiana Veterinary Association.	Pending.	Pending.	A. F. Nelson, Indianapolis.
Iowa Veterinary Ass'n.	Jan. 6-7-8, 1914.	Manhattan.	C. H. Stange, Ames.
Kansas State V. M. Ass'n.	Oct. & Feb. each year	Lexington.	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.	2d Tues. each month.	Philadelphia.	Robert Graham, Lexington.
Keystone V. M. Ass'n.	Pending.	Lake Charles.	Cheston M. Hoskins.
Lake Erie V. M. Association.	Sept., 1914.	Houllon.	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n.	July 3, 4, 1914.	Baltimore.	Hamlet Moore, New Orleans, La.
Maine Vet. Med. Ass'n.	4th Wed. each month	Young's, Boston.	H. B. Wescott, Portland.
Maryland State Vet. Society.	Feb. 3, 4, 1914.	Lansing.	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.	July 8-9, 1914.	Northfield.	W. T. Pugh, Southbridge.
Michigan State V. M. Ass'n.	1914.	Vicksburg.	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n.	Jan. 27, 28, 29, 1914.	Kansas City, Mo.	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.	Semi-Annually.	Galesburg, Ill.	J. D. Townsend, Louisville.
Missouri Valley V. M. Ass'n.	July, 1913.	Kirksville.	Hal. C. Simpson, Denison, Ia.
Mississippi Valley V. M. Ass'n.	Sept. 24, 25, 1913.	Helena.	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n.	2d Mon. Aug., 1914.	Denver, Colo.	S. Stewart, Kansas City.
Montana State V. M. A.		Lincoln, Neb.	A. D. Knowles, Livingston.
Nat'l Ass'n B. A. I. Employees.		Rochester.	S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Nebraska V. M. Ass'n.	1st Mo. & Tu. Dec. '13	Wilson.	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.	August 11-12-13, 1914	Fargo.	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.	June 23, 1914.	Delphos.	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n.	Week of July 20, 1914	Columbus.	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.	Nov. 1913.	Upper Sandusky.	E. V. Hover, Delphos.
Ohio State V. M. Ass'n.	Jan. 14, 15, 1914.	Oklahoma City.	Reuben Hilt, Toledo.
Ohio Soc. of Comparative Med.	Annually.	Toronto.	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.		Philadelphia.	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.	Fall, 1913.	Manila.	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.	1st Week in Feb. 1914.	Portland, Ore.	L. A. Willson, Toronto.
Pennsylvania State V. M. A.	Mar. 3, 4, 1914.	Mon. and Que.	John Reichel, Glenolden.
Philippine V. M. A.	Call of President.	Providence.	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.	4th Tues. each month.	Pending.	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.	Jan. and June.	Salem.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.	Pending.	St. Louis.	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns.	Aug. 4-5-6 1914.	Reading.	B. K. McInnes, Charleston.
South Illinois V. M. and Surg. Ass'n.	1st Wed. fol. the 2d	Philadelphia.	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors.	Sun. each month.	Madison.	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.	Dec. 16, 1914.	Los Angeles.	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.	Pending.	407 Illinois Ave.	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.	Jan. Apl., July, Oct.	Nashville.	S. W. Allen, Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.	4th Tues. each month.	College Station.	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp.	November, 1914.	St. P.-Minneapolis.	H. R. Collina, South St. Joseph.
Tennessee Vet. Med. Ass'n.	Nov., 1913.	Salt Lake City.	O. L. McMahon, Columbia.
Texas V. M. Ass'n.	2d Thu. each month.	Staunton.	Allen J. Foster, Marshall.
Twin City V. M. Ass'n.	Spring of 1914.	Pullman.	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n.		Yakima.	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n.		Buffalo.	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.		Pittsburgh.	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.	3d Wed. each month	Milwaukee.	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ.	1st Sat. each month.	Wash'ton, D. C.	J. M. Cashell, 2115 14th Street.
Vet. Ass'n of Manitoba.	Feb. & July each y.	Winnipeg.	Wm. Hilton, Winnipeg.
Vet. Med. Ass'n of N. J.	July 9, 1914.	Montclar.	E. L. Lobein, New Brunswick.
V. M. Ass'n, New York City.	1st Wed. each month.	141 W. 54th St.	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club.	Monthly.	Jersey City.	T. F. O'Dea, Union Hill, N. J.
Virginia State V. M. Ass'n.	July 9-10, 1914.	Staunton.	Geo. C. Faville, North Emporia.
Washington State Col. V. M. A.	1st & 3d Fri. Eve.	Pullman.	R. J. Donohue, Pullman.
Washington State V. M. A.	June, 1915.	Yakima.	Carl Cosier, Bellingham.
Western N. Y. V. M. A.	June 24, 1914.	Buffalo.	W. E. Frits, 358 Jefferson St., Buffalo.
Western Penn. V. M. Ass'n.	3d Thu. each month.	Pittsburgh.	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad.	Feb. 10, 11, 1914.	Milwaukee.	W. W. Arzberger, Watertown.
York Co. (Pa.) V. M. A.	June, Sept., Dec., Mar.	York.	E. S. Bausticker, York, Pa.

PUBLISHERS' DEPARTMENT.

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Rejected manuscripts will not be returned unless postage is forwarded.

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A CORDIAL INVITATION.—The H. K. Mulford Company extend a cordial invitation to all veterinarians to visit their biological laboratories and become acquainted with their methods of preparing biological products. See their announcement on page 15 (adv. dept.) of this issue and write them for full particulars on their Ophthalmic Mallein and Tuberculin and the immunizing White Scour Serum. Be sure to mention the REVIEW.

SOMETHING NEW.—Under this heading will be found listed on page 11 (adv. dept.) of this issue, *Calcium Sulphide* in 30-grain tablets. The preparation is not new (it has been tried and not found wanting this many years), but the size tablet is new. *Chloral Hydrate*, another old remedy in new form. No one will dispute that chloral hydrate in tablet form is new. Each tablet contains 60 grains. *Ethyl Chloride* (Abbott) in 50 gram tube. *Methylene Blue*, in coated tablets. New treatment for contagious abortion. *Phytolaccoid* in uncoated tablets. Indicated in inflammation of the mammary gland, and finally *Salicylic Acid* in uncoated 30-grain tablets. Used not only in rheumatism, but in bloating and flatulent colic. Look these up on advertising page referred to above, and when writing the Abbott people for detailed information in regard to them, ask them about the *Emphysema Compound* for heaves in horses and mules, and be sure to mention the REVIEW when writing.